The Newspaper of Information Systems Management
February 8, 1993, Vol. 27, No. 6, 94 Pages, $2/Copy, $48/Year

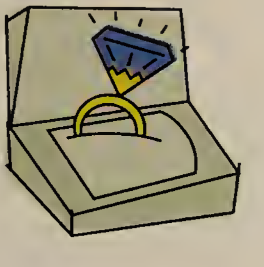
COMPUTERWORLD

Outsourcing contracts

Jeweler finds Chapter 11 to be negotiating gem

By Mark Halper
IRVING, TEXAS

You probably will not find it in any outsourcing primer, but Chapter 11 is an effective vehicle for renegotiating outsourcing contracts.



Just ask financially strapped jeweler Zale Corp., which is about to win a major concession from its outsourcer, IBM's Integrated Systems Solutions Corp. Zale's Chapter 11 status requires a review of this type of contract.

Moreover, the renegotiation will mark a customer coup because it comes as the terms of the original long-term contract were beginning to shift in ISSC's favor, sources said.

Zale is just the latest in a series of companies where information systems departments are discov-

Jeweler, *page 20*

32-bit fisticuffs

NT knockout sought with Portable OS/2

By Michael Vizard

While Microsoft Corp. plows ahead with the second phase of its beta test for Windows NT, IBM officials are targeting a midyear beta-test release of Portable OS/2, with general availability on the PowerPC RISC platform slated for first-quarter 1994.

"We already have some sites doing early alpha work with Portable OS/2, and we expect to be rolling out product by the end of this year or the first part of next year," said Larry Loucks, an IBM fellow who is director of software architecture for the Personal Systems Group.

For IBM, the arrival of Portable OS/2 is critical to its efforts to derail Microsoft's Windows NT, whose beta-test version runs on Intel Corp. platforms and a variety of reduced instruction set computing systems.

"Intel boxes will continue to be the majority of our systems, but we see a real opportunity developing for powerful

NT knockout, *page 12*

32-bit desktops

MANY SIMILARITIES BUT SOME BIG DIFFERENCES

Function	Unix	Windows NT	OS/2 2.0/2.1
Preemptive multitasking	Yes	Yes	Yes
Multithreading	Yes	Yes	Yes
Symmetric multiprocessor support	Yes (in some versions)	Yes	No
Security	B1 and B2 levels available	C2	No
Multiuser support	Yes	No	No
Portability	Yes	Yes	No

CW Chart: Nancy Kowal

Promises fly in OS market share battle

By Christopher Lindquist and Maryfran Johnson

The chase for the perfect 32-bit desktop operating system is on.

IBM, Microsoft Corp. and Novell, Inc. are all in frantic pursuit, intent on matching one another feature for feature as they present users with an increasingly ambitious list of functions and capabilities. The one certainty is this: The desktop is Microsoft's to lose.

It was not long ago that the only choice for a high-performance, multitasking operating environment was Unix. Now, however, IBM's OS/2 and Microsoft's Windows are maturing into products capable of competing with that old favorite.

In its new form as UnixWare — a blend of Unix System Laboratories, Inc.'s Unix System V Release 4.2 and Novell's NetWare and other variants, Unix is rising to meet the challenge with sleeker, easier to use versions.

The contest starts in earnest this year with Novell putting

Market share, *page 12*

IBM mainframes negotiable

Set price to vanish

By Johanna Ambrosio
SOMERS, N.Y.

Drastic times call for drastic measures, and an aggressive IBM will try to show it means business when it unveils 18 new or upgraded mainframes tomorrow without any printed prices. Instead, IBM will negotiate with customers based on their total needs for hardware, software and services.

The newly unwrapped Enterprise System/9000 models, which include a Model 982 top-of-the-line eight-processor computer, will boost performance by at least 28%.

Additionally, IBM is said to be cutting memory prices by at least 40% and may even cut prices on existing ES/9000 mainframe computers by as much as 20%.

Current list prices are roughly $100,000 per million instructions per second, although discounts often bring the price to between $50,000 and $55,000 per MIPS.

The dramatic pricing tack adopted for the new computers will actually formalize a practice that has already been going on in many of the largest user shops. It works like this: IBM sales representatives and the customer sit down and figure out the total pack-

Set price, *page 4*

Newspaper

Frame relay pumped up

MCI price reductions may prompt further rate cuts

By Joanie M. Wexler
WASHINGTON, D.C.

Disappointed with the meager cost savings trickling in from their frame-relay networks, some users gained renewed hope last week at the ComNet '93 show.

MCI Communications Corp. told attendees it has slashed rates by 20% to 70% and introduced an option to let users pay only for the data they send.

Marketing claims have had users expecting to see 30% to 40% savings over leased-line networks. But savings are averaging just 10% to 15%, explained Steve Sazegari, chief analyst at San Francisco consulting firm Ryan Hankin Kent, Inc. "And users are complaining," he said.

Dataquest's Joe Noel *says AT&T will be forced to cut prices*

Under MCI's new pricing structure, current MCI frame-relay customers should save an extra 20% to 30%, said Paul Weichselbaum, MCI vice president of data product marketing.

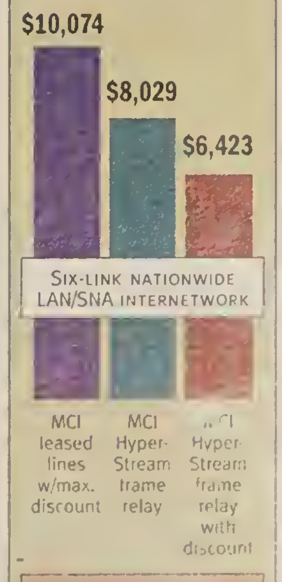
In addition, the MCI move, targeted at eroding AT&T's $7 billion-a-year private-line market, "should cause AT&T to lower prices and push frame relay aggressively," predicted Joe Noel, principal analyst at Dataquest, Inc., a consulting firm in San Jose, Calif. He indicated this could result in more widespread use and acceptance of the technology.

To date, Noel said, AT&T has been largely in a reactive sales mode with frame relay because it

Frame relay, *page 14*

Frame-relay sale

MCI revamped its frame-relay pricing structure to simplify comparison with leased-line nets



Flat rate pricing, not based on usage. Access costs not included.

Source: MCI Communications

Thomas Giammo of the U.S. Patent and Trademark Office attempts to document the unknown. Page 55

In this issue

NEWS

Fallout continues in the wake of IBM's poor financial performance and cutbacks. Some of the company's biggest customers haven't seen great changes in support but want to be ready for what they say is an inevitable downturn. *Page 47.* **IBM will throw away** the price book on new mainframes introduced this week. Instead, it will negotiate with customers based on "total packages" of software, hardware and services. *Page 1.* **On the product side,** IBM will introduce a slew of new mainframes this week in an attempt to boost sagging revenue, but it may also dramatically alter host pricing schemes. *Page 1*

At ComNet, it became apparent that users disappointed with their frame-relay cost savings could see the market dynamics shift and prices drop in the wake of a price restructuring by MCI. While Asynchronous Transfer Mode networking was the lip-service winner at the show last week, many users are facing facts with the incomplete technology's current barriers. *Pages 1, 14*

RDBMS

Be careful in your selection of an RDBMS for client/server configurations. While some progress has been made, the leading RDBMSs are still adapting slowly to the new challenges of this environment, and there are significant differences among products. Nevertheless, users surveyed in Buyers' Scorecard give market leaders Oracle, Sybase, Informix and Ingres high marks for meeting their needs. *Page 59*

Our Firing Line product evaluation of Gupta's SQLBase 5.1 reveals that the vendor has moved the product closer to meeting its promise of being a fully functional client/server platform. *Page 65*

MANAGEMENT ISSUES

Outsourcing can be gut-wrenching. But appropriate preparation, intelligent contracting and vigilant monitoring can help you avoid problems such as escalating costs and staff lawsuits. *Page 67*

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Some delays seen

DME trips on object orientation

By Elisabeth Horwitt
WASHINGTON, D.C.

The Open Software Foundation (OSF) is having trouble fitting the object-oriented piece into the Distributed Management Environment (DME) puzzle. As a result, users may have to wait longer than they expected for the fully functional multivendor distributed system management standard, according to vendors close to the project.

OSF officials at last week's Communication Networks Conference and Exposition (ComNet) cited a September ship date for DME services, which include event logging and use the OSF's Distributed Computing Environment protocols to interconnect various management nodes and managed devices. The original ship date was to have been June 1993.

This delay will not affect the product rollout schedules of vendors that have announced DME-compliant products, OSF officials said.

Meanwhile, the OSF said the DME framework will ship by year's end. The framework defines how vendors fit together the various pieces of DME: data engine, data collection platform, graphical user interface and object-based management architecture.

However, vendor spokesmen said the OSF has been struggling with its job of getting all of DME's pieces to function effectively as a single unit. In particular, the OSF has had trouble integrating object-oriented architecture from Tivoli Systems, Inc. with Hewlett-Packard Co.'s OpenView piece that collects the data from various networked systems, said Wim Roelandts, vice president and general manager of HP's Computer Systems Group.

At a ComNet briefing, OSF President David Tory said DME can get along without its object technology, at least for a while. "The whole object-oriented technology [industry] is changing, a lot of independent software vendors are not there yet and users are terrified of objects," Tory said.

Mix and match

Even so, while users may not want to do object-based programming themselves, they "really want object-oriented system management," said Bob Herwick, an analyst at San Francisco investment banking firm Hambrecht & Quist, Inc. That is because it will enable them to mix and match their favorite applications with whatever multivendor systems installations they happen to have, he said.

The OSF recently began working directly with key vendors such as HP and IBM instead of trying to fit DME together all by itself, "so we're making progress now," Roelandts said.

Users should be able to get their hands on products with some DME attributes within months, vendor spokesmen said. For example, IBM's NetView/6000 Version 2, due out in the next few months, will support DME's Consolidated Management Application Programming Interface (CM/API), an IBM spokesman said. CM/API is one of the earlier pieces of DME to become available.

CM/API, in combination with the DME data collection architecture, promises integrated management across the Common Management Information Protocol world, which includes telecommunications devices and circuits, and the Simple Management Information Protocol world of local-area networks and routers.

Pentium delay could be a blessing

By Michael Fitzgerald
SANTA CLARA, CALIF.

Intel Corp. confirmed last week what the industry essentially knew: Pentium chip-based systems will not be available in the first quarter of 1993. Not so obvious, however, is that the delay may provide the extra time needed to address two key issues: heat dissipation and the need to recompile software for the Pentium chip.

CI/Infocorp has predicted that only 200,000 Pentium systems will ship in 1993.

Intel has denied that heat dissipation is a problem, though many vendors said the design issues presented by the high-heat chip are significant.

The compiler issue is one Intel has acknowledged and addressed from the start. While Pentium will run all Intel-based software, the chip gets much of its performance from a superscalar architecture that allows it to run two instructions per clock cycle vs. the single instruction per cycle in prior Intel chips.

"I don't know if the industry is going to be disappointed [in Pentium's performance] or not," said Gary Stimac, senior vice president of systems at Compaq Computer Corp. Stimac said early predictions of double and triple the software performance may not materialize without recompiled software, particularly because these early claims were made before Intel introduced its 50-MHz and 33/66-MHz I486 chips.

Stimac said the software compiling issue would affect vendors more than users, "except that users will want to have Pentium-optimized software."

Although Intel still plans to publicly discuss technical details of the Pentium chip in late March (March 22, according to sources), systems vendors will not announce systems until late May.

Desktop system vendors had expected to announce Pentium-based systems at the same time the chip was announced.

"I'm pleased they're not doing the same kind of fiasco they did with the 386 and 486 introductions," said Bruce Bohuslav, president of Systems Integration Associates, Inc. in Chicago. He referred to Intel's announcement of chips months before vendors could ship them in systems.

Analysts shrugged off the news.

"The big deal is the 486," said John Joseph, an analyst at Kidder Peabody & Co.

Research firm Computer Intelligence/Infocorp predicted that no more than 200,000 Pentium systems will ship in 1993, a tiny portion of the market.

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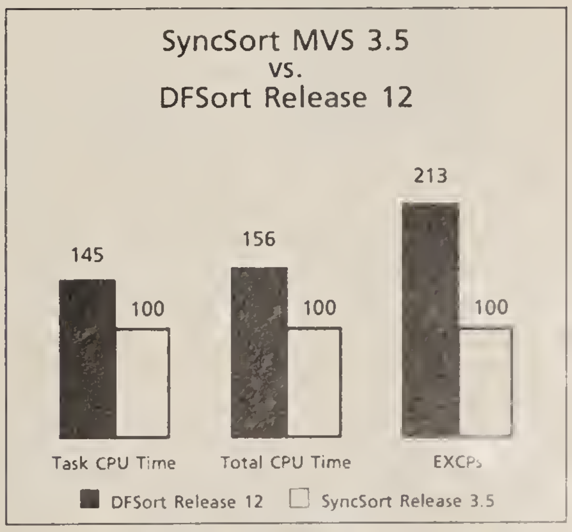

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Super debut

IBM's Scalable Power Parallel System 1 (SP1) — possibly the worst-kept secret in the supercomputer world — made its official debut last week at the top end of the RISC System/6000 line (see story page 8).

Able to run both parallelized applications and AIX Unix software, the SP1 is priced from $312,000 and is scalable from eight to 64 processors.

The machine will be in beta-test sites next month and generally available in October, targeted at technical users only.

The SP1 is the brainchild of IBM's mainframe group but will be raised in the RS/6000 family under the care of a new internal organization called Power Parallel Systems.

Expected in the second quarter is a different parallel system, which will be aimed at the commercial crowd and based on mainframe 390 architecture.

— Maryfran Johnson

Set price to vanish

CONTINUED FROM PAGE 1

age needed — software, hardware and services — and then arrive at a price based on those needs and the upgrade plans going forward a year or two.

"It's going to simplify the dealings and negotiations, avoid a lot of the back and forth and allow IBM to put packages together fairly quickly and easily," said Doug Underhill, vice president at CSX Technologies, Inc. in Jacksonville, Fla. And, he said, "IBM is trying to find a way to differentiate its offerings from the competition. There's really no difference anymore except price."

Even without the pricing bombshell, the large midlife price/performance improvements are a first, observers said. IBM traditionally boosts each new generation by about 20%. Part of the reason behind the dramatic improvements is the time between the last major mainframe announcement in September 1990 and this one, as well as the fact that IBM is fighting to keep its share of a slow-growing market.

"We're off all historical precedents right now," said Jay Stevens, an analyst at Dean Witter in New York. "IBM will do what they have to do."

The company will also cut memory prices by 40% to 50%, sources said, to between $1,000 and $1,200 per megabyte. This will help users accommodate the vastly increased memory capacity of the new Model 982, which will hold a minimum of 1G byte of main memory — twice the amount of the former top-of-the-line Model 900. About a dozen 982s have already shipped to user beta-test sites.

Other pieces of the announcement are expected to include the following:

- A total of 18 new or improved ES/9000 models — eight water-cooled and 10 air-cooled. Some, such as the seven- and eight-way water-cooled machines, will be entirely new; others will be upgraded versions of existing models.
- Performance boosts of roughly 28% for the water-cooled computers and 40% to 50% for the air-cooled machines. The new processors will run at about 50 MIPS vs. the old 40-MIPS engines in the existing ES/9000 models.
- A new uniprocessor called the 711, on which the whole water-cooled family will be based.
- Field upgrades for existing ES/9000 models.
- A specialized data-compression engine based on an ES/9000 chip set. This will be the first of many specialized engines to come, including one for DB2 queries expected later this year.
- Availability by March of the new high-end mainframes, although some of the software to optimize the new hardware may not be available until later this year.
- An add-on feature to the MVS operating system, called Open-Edition Services, that joins MVS with the Posix set of standards. IBM will try to position MVS and the ES/9000 family more as an open system.

Still early in the game

Users and analysts applauded the pricing moves and new products but said it is too early to tell how much they will help stem IBM's bleeding mainframe revenue, which in 1992 fell by 12% from the year before.

"Clearly, this will help slow the erosion, but I wonder what [machines] customers are going to send back to IBM when they order the eight-way," Stevens said. For example, if customers swap out two older machines (such as a Model 720 and a Model 900) for one new one, IBM could suffer a net loss on both hardware revenue and software license fees.

Susan Gannon Middleton, an analyst at Technology Investment Strategies Corp., said the introductions will likely help IBM's first- and second-quarter revenue figures.

On the way

IBM will introduce tomorrow at least 18 new or improved models of its ES/9000 line. The most powerful computer, the eight-processor Model 982, will run at about 410 MIPS and will have up to 1G byte of main memory — twice the memory capacity of the current top-of-the-line Model 900. IBM is also cutting memory prices in half.

PCM comeback

Amdahl Corp. and Hitachi Data Systems Corp. are already making noises about how they will respond to IBM's mainframe announcements tomorrow (see story at left).

HDS, which lists its six-way GX 8620 mainframe at $20.5 million, plans to bring out its own eight-way machine.

It will match IBM's power boost of 25% to 30%, said Bill Tudor, director of HDS systems product marketing. He did not say how soon this would happen, however.

Amdahl's director of processor marketing, Henry Cassel, said Amdahl's eight-way 5995-8650M processor, which is listed at $30 million, has been on the market since September 1992. Between 10 and 20 such machines are installed worldwide.

The 8650M is rated at about 350 MIPS, but that could change when Amdahl gives its response to IBM's announcement later this week.

Cassel said he had expected IBM would "tear up the price list" in the U.S., as it did in some European countries in the late 1980s.

Cassel did not say whether Amdahl would match that, too. Discounting for IBM-compatible mainframes has been commonplace for more than two years, he said.

Historically, IBM was able to "freeze" the mainframe market for months preceding a big announcement. Users knew Amdahl and HDS were forced to respond, but they also realized the vendors often failed to ship products for a year or more.

However, IBM's recent troubles have changed the rules about freezing the market, the two Silicon Valley vendors said.

Amdahl posted record fourth-quarter mainframe sales, and fourth-quarter sales of HDS mainframes edged out quarterly sales of its peripherals for the first time since Hitachi Ltd. and Electronic Data Systems Corp. formed HDS in May 1989.

— Jean S. Bozman

Doors shut on supercomputer start-up

Employees petition Clinton

By Ellis Booker
EAU CLAIRE, WIS.

Playing on President Bill Clinton's campaign promise to support start-up companies and develop high technology in the U.S., a group of employees from Supercomputer Systems, Inc. wrote to the new president for help last week.

IBM pulled the plug on the company two weeks ago, withdrawing its financial support from the 5-year-old venture. As the principal backer, IBM had invested between $100 million and $200 million in the venture, analysts said. The shutdown affected 320 employees.

The letter to Clinton, which was also released to the press, challenged the president to lend his support to their effort to salvage the supercomputer maker but shied away from asking for money.

"What we seek from you is not taxpayer money but support: Your public support could help us gain the time and financing we need to save our company," the letter stated.

There was no response from the White House as of press time.

The employee group said it hopes to raise $20 million to $30 million in "immediate, short-term funding." Prior to losing IBM's support, company founder Steve Chen had begun a worldwide search for $60 million and new investors [CW, Feb. 1]. Chen was not one of the letter writers, nor did he give his approval to the group, a company spokesman said.

Sources close to Supercomputer Systems said the company's four industrial partners — The Boeing Co., Ford Motor Co., Du Pont Co. and Electronic Data Systems Corp. — have indicated their wish to help the venture but within their own financial constraints.

In their letter to Clinton, Supercomputer Systems employees reiterated Chen's claim two weeks ago that the firm had successfully tested and benchmarked its next-generation supercomputer, the SS-1. "We did it! We built the world's fastest supercomputer. We built it in America, as a start-up, on limited funds. . . . This was our 'American Dream.' "

For the past two weeks, many Supercomputer Systems employees have been wearing T-shirts emblazoned with the phrase: "If you build it, they will come."

Meanwhile, it is not the only woe-struck supercomputer maker. Market leader Cray Computer Corp. continued to suffer from the difficulties of getting a complex product to market. The company reported a fourth-quarter loss of $12.6 million. The deficit was slightly less than the previous year's $14.6 million fourth-quarter loss; company officials attributed the improvement to tighter expense controls.

For the year ended Dec. 31, Cray lost $50.5 million, compared with $52.2 million in 1991.

The supercomputer company, founded by Seymour Cray, records nominal-only revenue because its first product, the Cray-3, is still under development.

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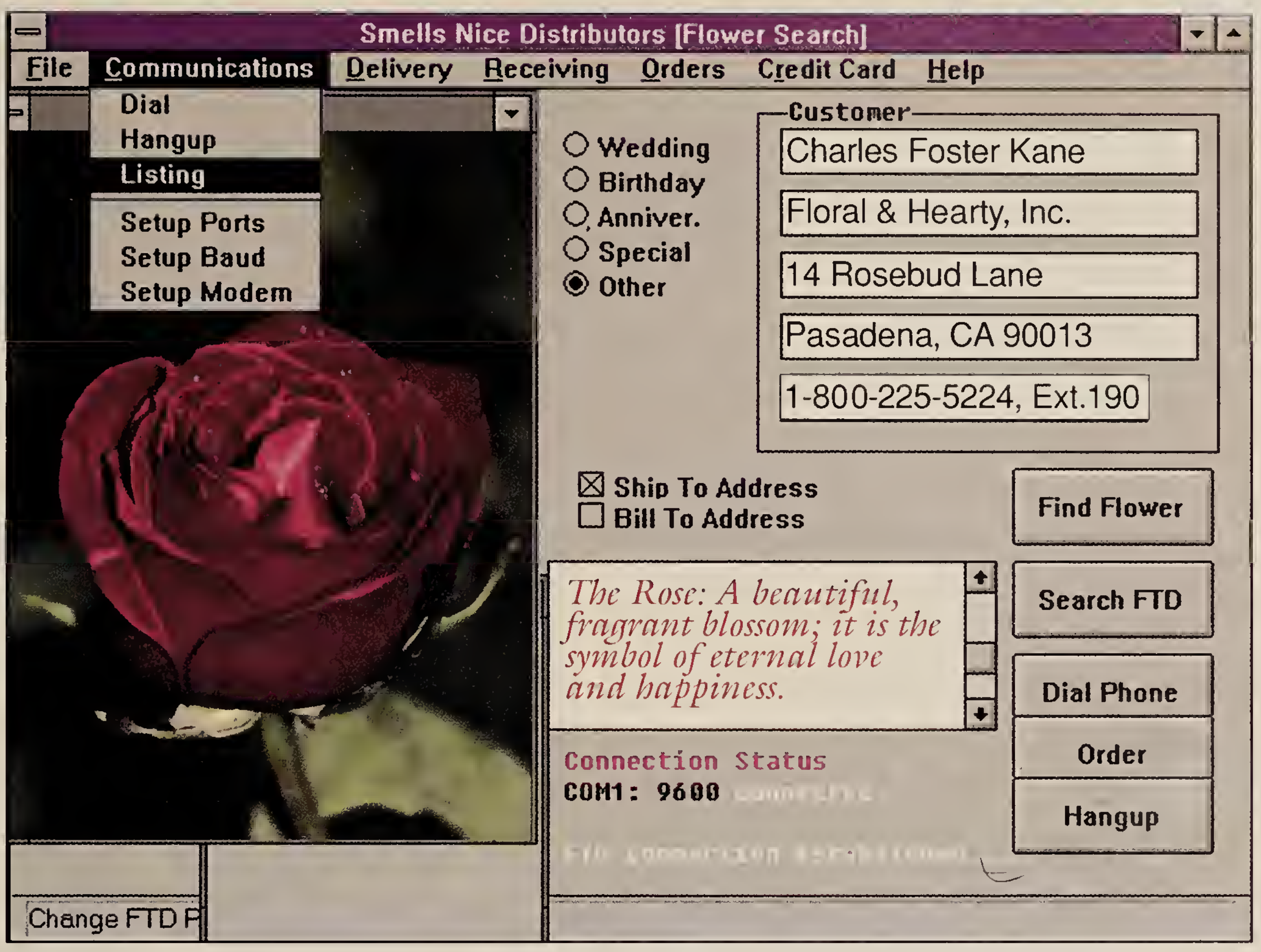

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News Shorts

FBI shutters Ohio bulletin board

Rusty & Edie's, the fourth-largest bulletin board in the U.S., was shut down last week by the FBI over alleged software piracy. The FBI and the **Software Publishers Association** claimed Rusty & Edie's has allowed and encouraged illegal copying of numerous copyrighted business and entertainment software packages by the board's 14,000 subscribers. This is the first raid since October, when Congress raised software piracy from a misdemeanor to a felony. Convicted pirates now face up to five years in jail and $250,000 in fines.

Dell to expand service plans

Dell Computer Corp. is expected to cut prices 6% to 21% and expand its service offerings this week. Sources said Dell will introduce SelectCare, a mix-and-match service package that includes options for extended warranties, training for information systems personnel, cheaper on-site service and expanded third-party service agreements. Dell will also expand its support to 24 hours a day, seven days a week.

HP ups benchmark battles

Hewlett-Packard Co. fired another salvo in the battle of on-line transaction processing benchmark results last week when it reported that its Unix-based HP 9000 Series 800 Model H40 outperformed the competition on the **Transaction Processing Performance Council**'s new TPC-C test. Running **Informix Software, Inc.**'s Informix 5.0, the HP system scored 406.65 transactions per minute with a cost of ownership of $2,786 per transactions per minute, HP said. HP also said its machine exceeded the RISC System/6000 Model 570, which IBM introduced last week.

Lotus ships OS/2 applications

Lotus Development Corp. last week shipped a 32-bit version of its 1-2-3 spreadsheet and Freelance Graphics software that is tightly integrated under the Workplace Shell interface on OS/2 2.0. Lotus said it expects to ship 32-bit versions of its Ami Pro word processor and CC:Mail products for OS/2 by midyear. The packages are priced at $495, the same as Lotus' 1-2-3 for Windows. Lotus also announced that it has acquired **Vanguard Business Solutions, Inc.**, a San Francisco consultancy.

Zenith Data wins Desktop IV — again

The **U.S. Department of Defense** made its third contract award in the ill-starred Desktop IV procurement to **Zenith Data Systems** and **Government Technology Systems, Inc.** for up to 300,000 PCs and office-automation software packages. The first award, made in November 1991, was thrown out after an experimental "fast-track" selection process when numerous bidders protested that their proposals were unfairly rejected for minor flaws.

SHORT TAKES **CompuAdd Computer Corp.** said it is shipping the 450SLC2, the first product of its relationship with IBM's Electronic Card Assembly and Test unit. The unit uses IBM's 50-MHz SLC2 processor and includes a 170M-byte hard drive, 4M bytes of random-access memory and a 14-in. color monitor at a base price of $1,695. . . . **Advanced Logic Research, Inc.** released PCs that use a local-bus architecture as part of a 16-product rollout that included two multimedia machines. . . . **Zeos International Ltd.** released Contenda, a $1,495 subnotebook that weighs 3.9 pounds, is based on Intel Corp.'s 25-MHz 80386SL chip and comes with 2M bytes of RAM, an 80M-byte hard drive and a built-in trackball.

News shorts, *page 16*

San Diego Gas to re-engineer

Technology unit will be used as test bed for processes changes

By Thomas Hoffman

SAN DIEGO

When the California Public Utility Commission blocked a planned merger between San Diego Gas & Electric Co. and Southern California Edison Co. in May 1991, the action dashed three years of planning between the two utilities intended to merge their information systems operations.

Following the aborted merger and fueled by competitive changes and deregulation in the utilities industry, San Diego Gas realigned its organization into sets of functional teams in an attempt to improve support of common operating goals and strategies.

Last week, the $1.87 billion utility launched a major companywide re-engineering initiative to augment the company's reorganization.

Unique approach

Though San Diego Gas is not the first utility to embark on re-engineering, industry analysts said the company's approach is unique, if not commendable, because San Diego Gas will launch its effort by using its IS and technology division as a test bed.

"What works and what doesn't work is an important part of the learning process, and we expect to be able to transfer this knowledge to other projects," said Lynn H. Congemi, director of IS at the utility.

Business process re-engineering is key to San Diego Gas, which must become more competitive in a deregulated market, Congemi said.

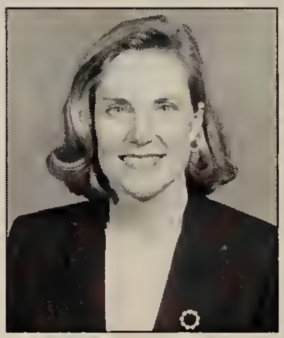
Last December, San Diego Gas' chairman and chief executive officer, Thomas A. Page, announced that as of Jan. 1, the company would consolidate into five teams consisting of customer service, energy and projects, external affairs, financial services and human resources. Executives said departmental "teams" would enable divisions to work more closely toward achieving common objectives.

Results-oriented

The utility has worked hard to earn its high marks. At San Diego Gas, the number of customers per employee is among the highest in the nation. The utility went from 200 customers per employee in 1984 to the current figure of 425 customers per employee.

Starting this month, the IS division will begin overhauling its IS processes. According to Congemi, members of each corporate functional unit will work with IS staff members on project teams to determine the platforms necessary to support the business requirements of each division.

The IS division — whose budget was close to $40 million in 1992, according to San Diego Gas — comprises six departments, with four of those providing services to San Diego Gas users independent of one another. The re-engineering initiative, Congemi said, will help improve integration of project activities between IS service teams and functional units. "Our goal is one-stop shopping for our customers," Congemi said.



San Diego Gas' Lynn H. Congemi: *'Our goal is one-stop shopping for our customers'*

Three of the six IS departments currently in place focus on providing users with services in telecommunications, PCs and PC training. Some of the project goals include possibly consolidating three help desks into one and building an integrated system to provide follow-up help.

"We're trying to make that process invisible for the end user" by providing users with a single point of contact for all help desk services, Congemi said. Currently, IS uses several isolated systems to support telecommunications and PC support inquiries.

Despite these efforts, no IS staff cuts are expected.

Another benefit anticipated from re-engineering the IS division's processes is to refocus staff members now providing skill and training sessions on systems on providing additional client/server and local-area network services.

Congemi said it is too early to tell what, if any, cost savings may result from the IS overhaul. However, she added that by gaining the flexibility to reallocate its IS staff freely, San Diego Gas will be able to avoid hiring additional IS staff members.

IS cost savings last year were targeted at reducing expenses in the glass house. By renegotiating equipment leases and installing more effective systems management tools, Congemi estimated, San Diego Gas was able to save almost $1 million in 1992 on combined capital and operational costs.

A downsizing 'revolution'

To get more information out to customers faster, San Diego Gas & Electric has caught the downsizing wave.

According to Susan Fratamico, manager of customer and operating service systems at San Diego Gas, the utility last summer kicked off a re-engineering project — aimed at revolutionizing its gas systems environment — with an evaluation of 15 functional areas tied to the natural gas business.

Pushing the project, according to Fratamico, was the need to use incentive rate-making to provide gas as inexpensively as possible. Buying more than half the gas it sells "enables us to pass along rate savings to our customers, and we end up saving money by having an automated system across the company," Fratamico added.

Following the evaluation of the functional requirements, San Diego Gas is now in the process of installing a variety of Intel Corp. I486-based PCs and servers under a client/server architecture, which will be linked over Banyan Systems, Inc., Novell, Inc. and a large concentration of IBM Token Ring local-area networks.

All application software for the new gas environment is being developed in-house, as are the graphical user interface front ends to the system. The system replaces nonintegrated spreadsheets and handwritten reports.

Fratamico said she expects the hardware to be installed in the next few months. During that time, she said, San Diego Gas hopes to standardize on one of the three networking platforms. Overall, Fratamico estimated the project will save the utility "millions of dollars" in increased efficiencies. — *Thomas Hoffman*

DISTRIBUTED QUERY COMPARISON

SYBASE

90 LINES OF COMPLEX CODE

ORACLE7™

3 LINES OF INDUSTRY STANDARD SQL

```
/* reset the counter for build of third table */
```

```
CREATE PROCEDURE la_qty
/* for use on WESTCOAST server */

/* returns count for one part only */
@partno char(6),
@la_count int output
AS
SELECT @la_count =
(SELECT qty FROM la_parts
WHERE partno = @partno)

DECLARE @cnt int
DECLARE @counter int
DECLARE @la_count int
DECLARE @partno char(6)
SELECT @cnt = COUNT(partno) FROM ny_parts

/* ny_parts is the parts master; need count
for sequential comparison with la_parts
to simulate a distributed join */

SELECT @counter = 0

/* create temporary table for part numbers
and quantities from ny_parts */
CREATE TABLE #allparts1
   (partno char(6) NULL,
   ny_qty int null)

/* create temporary table for row numbers
for sequential call of la stored procedure */
CREATE TABLE #allparts2
   (seq int)

/* create temporary table for
sequential build from first two temp tables */
CREATE TABLE #allparts3
   (partno char(6) NULL,
   ny_qty int null,
   la_qty int null,
   seq int)

/* build sequence numbers for each ny row */
while @counter 1> @cnt
begin
   select @counter = @counter + 1
    insert into # all parts 2 (seq) values ( @ counter )
end

/* populate temp table with ny parts and quantities */
insert into #allparts1 (partno, ny_qty)
select ny_parts.partno, ny_parts.qty from ny_parts
```

*Program code independently written and tested.

```
SELECT NY_QTY, LA_QTY
FROM NY_PARTS, LA_PARTS
WHERE NY_PARTNO = LA_PARTNO;
```

These two programs do exactly the same thing: retrieve data from multiple servers. Oracle does it with a single 3 line Industry Standard SQL query. Sybase requires 90 lines of complex code. If productivity is important to you, call 1-800-633-1071 Ext. 8185.

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Desktop to data center

RS/6000s span spectrum

By Maryfran Johnson
NEW YORK

IBM spread the wings of its Unix-based RISC System/6000s over new territory last week, introducing nine new models that swoop down to $3,995 for an entry-level workstation and stretch up past $300,000 for an eight-processor parallel computer.

Company officials showed no lack of confidence in the RS/6000's future. Pointing out the machine's recently profitable status, executives vowed to unseat Sun Microsystems, Inc. from its No. 1 spot in the workstation market by 1994. With its 18% market share, IBM now trails third behind Sun and Hewlett-Packard Co.

Users must wait until midyear, however, for the most significant RS/6000 news. That is when IBM will unveil the first low-end systems based on the PowerPC architecture, which the computer giant is jointly developing with Motorola, Inc. and Apple Computer, Inc.

Scheduled for delivery still later this year is a higher performance round of Unix systems based on the next generation of the RS/6000 CPU — the so-called RIOS-2 chip set.

No real change

Analysts viewed last week's announcement as mainly a realignment of the price/performance of various models accomplished by trickling down technology from high-end products into the midrange.

"They seem to have a sense of urgency about maintaining their competitive position," said Richard Lester, vice president of information services at Associated Grocers, Inc. in Seattle. The company installed 10 RS/6000 midrange machines recently as part of a client/server rollout of IBM, NCR Corp. and HP Unix systems.

"We're looking for two things: vendors committed to maintaining competitive price/performance with others in the market and [companies] willing to extend the state of the art in open systems," Lester said.

"IBM is in the game," agreed Duane Elms, program manager of technical computing at General Electric Co. in Fairfield, Conn.

"My motto is, 'palmtops to teraFLOPS,' " said Phil Hester, vice president of systems technology at Advanced Workstations and Systems, the Austin, Texas-based IBM unit responsible for Unix systems and software.

"We have two parallel road maps evolving. One is the PowerPC single-chip, high-volume multiprocessor technology. And positioned above that are multichip implementations of the architecture with a lot higher levels of performance and much better scalability beyond a single-chip design," Hester said.

Sandwiched between last week's announcement of the $3,995 M20 diskless color workstation and the high-end Power Parallel System (see story page 4), IBM unveiled a high-capacity Network File System server that claims to be three to five times faster than standard Unix file servers. Three new technical graphics workstations, an X Window System terminal and new midrange and high-end server models filled in the other gaps in the line.

Prices skydiving

Although there was no new performance or functionality added to the graphics arena, IBM did cut prices on its current low-end graphics adapters and repackaged an entry-level, three-dimensional graphics product to fit the RS/6000 Model 220 box.

IBM is also honing its sales force expertise, company officials said, by placing specially trained Unix teams in each of its 60 U.S. sales territories.

"This is a turning-point year for them," said George Weiss, an analyst at Gartner Group, Inc. in Stamford, Conn. "There are a lot of reasons to feel a little bit of skepticism about IBM pulling it all off. They're going to have to make sure they understand the PC world, the Unix world and how to sell into both."

Filling every need

IBM's RS/6000 rollout spans from entry-level to supercomputer

	M20 Entry Client Workstation	7051 Power Network Dataserver	Scalable Power Parallel (SP1) System 9076
Features	•33-MHz RISC CPU. •16M bytes memory. •Diskless. •Integrated 8-bit graphics. •Lowest priced 2-D color system.	•Maximum of 144G bytes of storage. •Maximum of 2,000 NFS I/O operations per second. •Includes RS/6000 Model 340. •CD-ROM support via Model 340.	•Scales from 8 to 64 RISC processors. •Processing power from 1 to 8 GFLOPS. •High-speed communications between processor nodes.
Price/Availability	$3,995 End of March	$177,600 April	$312,000 (entry-level) October

At long last

IBM's RS/6000 line reached profitability in the last fiscal quarter of 1992. Officials said that while revenue growth of 50% in 1992 did not materialize, RS/6000 income did grow 30% to 35% worldwide.

AS/400 users feeling pinch from IBM staff cuts

By Johanna Ambrosio and Kim S. Nash
ROCHESTER, MINN.

As if IBM does not have enough problems, customers of one of its hottest systems, the Application System/400, have stumbled on a dent in the much-heralded armor of IBM service. Some AS/400 shops feel they are getting lanced when it comes to support calls, and there is a sneaking suspicion that IBM's early retirement programs may carry some of the blame for this.

Ron Taylor, manager of computer operations at Dominion Textile, Inc. in Montreal, said his firm recently experienced a two-day outage with its Model D45 because of a microcode snag. "I don't ever recall a problem where a machine has been down for that long," he said, "and I've been working with computers for 30 years."

The local Montreal field support office had experience only in hardware, and the field engineer could not pinpoint the problem, Taylor said. The problem eventually went to a main IBM office in Vancouver, British Columbia, all the way across the country, before being shifted over the border to the AS/400 support staff in Rochester, Minn., where the issue was finally resolved.

In theory, that should not have happened, said Bob Summers, IBM's market development manager for AS/400 services. "The support structure has been beefed up over the years. We used to have two tiers of support: one in Chicago and one in Rochester. Now we have one tier, and everything's in Rochester."

The realignment, completed late last year, was to "make sure customers have access to experts," Summers said. "It's always difficult to make sure that the right people are in the field-support office, no matter if you have 10 or 20 support engineers in the office. Our objective was met independent of any downsizing in IBM." Additionally, users can sign up for optional services for a fee.

Free hardware and software support come with warranties, Summers said. After the hardware warranty runs out, support is included in maintenance charges. There is currently no warranty limit on software support, he added.

Shipments slipping

Still, customers and others have noticed some differences at a time when IBM is preparing to introduce new AS/400 models with significant performance boosts. Then, too, AS/400 shipments have slowed lately; 1992 revenue from the AS/400 family fell by about 2% compared with that of 1991.

Some observers, such as J. Rodger Peck, president of Peck Systems Group Ltd., a consulting firm in Bridgman, Mich., attributed the shortcomings to IBM's downsizing efforts.

"IBM has lost a number of quality people through retirement, attrition or redeployment," Peck said. "Local branches are doing as good a job as they can, but IBM lacks the quality people they had a couple years ago." One theory holds that AS/400 specialists may be particularly willing to take early retirement because their skills are in great demand outside of IBM.

Especially tricky for new users, Peck said, is acquiring the programming knowledge needed to perform certain communications jobs.

Support has been "questionable" for Jos. A. Banks Clothiers, Inc., according to Frank Black, vice president of information services at the Hampstead, Md., firm. "They just don't have qualified [software] people locally. We just avoid them, using outsiders like Computer Task Group," he said.

Chuck Hagadorn, manager of AS/400 technical services at Playtex Family Products in Dover, Del., recalled a time when it took more than two hours to talk to a support person in Rochester. "We talked to a person who transferred us to a computer. Usually it's the other way around."

Playtex, a former mainframe shop that downsized, "is just used to a different level of support," Hagadorn said. "There's been a breakdown in our ability to communicate with IBM. There's been no serious impact on us, but it is an annoyance."

Still, he said, IBM's responsiveness has improved since Playtex registered a complaint about six months ago.

Blue ballyhoo

In September 1992, IBM announced seven for-fee services targeted at the AS/400 user base. These included telephone support and consulting, on-site assistance, an assigned technical expert to talk to, electronic conferences and performance monitoring, trend analysis and management reports. So far, "thousands" of customers have signed up, according to an IBM manager.

Top service ratings

IBM's loss of support personnel may affect the company's high service and support rating among AS/400 users

Vendor	Service and support rating
IBM AS/400	8.9
HP 3000	8.4
DEC VAX	8.4
DG MV/ Eclipse	8.1

Ratings are based on a scale of 1 to 10, where 10 is best

Response base: 30 users of each product

Source: *Computerworld* Buyers' Scorecard, Nov. 30, 1992

REFERENTIAL INTEGRITY COMPARISON

SYBASE

200 LINES OF PROPRIETARY CODE

ORACLE7™

12 LINES OF INDUSTRY STANDARD SQL

```
/*    Make sure deleted manager does not have any
```

```
/*Prohibit updates to the deptno foreign key in the emp table
```

```
(select count(empno) from inserted
```

```
CREATE TABLE dept
            (deptno int not null,
            dname char(14) not null)

CREATE UNIQUE INDEX dept_primary_key ON dept(deptno)

CREATE TABLE emp
            (empno int not null,
            mgr int null,
            deptno int null)

CREATE UNIQUE INDEX emp_primary_key ON emp(empno)

CREATE TABLE proj
            (projno int not null,
            budget float null,
            deptno int null)

CREATE UNIQUE INDEX proj_primary_key ON proj(projno)

/*    Make sure deptno column of inserted emp rows is either null
      or specifies an existing department. Also make sure that
      mgr column of inserted emp rows is either null or specifies
      an existing manager. */

create trigger emp_insert
on emp
for insert as
        declare @row int
        select @row = @@rowcount /* rowcount will get changed */
/*    check "emp.deptno <—> dept.deptno" foreign/primary
            key relationship */
        begin transaction
        if
            (select count(empno) from inserted where
                inserted.deptno is null)
            +
            (select count(deptno) from inserted
                where inserted.deptno in
                (select deptno from dept)
            < @row
        begin
            raiserror 22220 "emp row specifies non-existent department"
            rollback transaction
        end
/*    check "emp.mgr <—> emp.empno" foreign/primary key relationship */
        else
        if
```

*Program code independently written and tested.

```
CREATE TABLE DEPT
   (DEPTNO NUMBER(2) PRIMARY KEY,
   DNAME CHAR(14) NOT NULL);

CREATE TABLE EMP
   (EMPNO NUMBER(4) PRIMARY KEY,
   MGR NUMBER(4) CONSTRAINT mgr_fkey REFERENCES EMP,
   DEPTNO NUMBER(2) CONSTRAINT dept_fkey REFERENCES
DEPT);

CREATE TABLE PROJ
   (PROJNO NUMBER(4) PRIMARY KEY,
   BUDGET NUMBER(7,2),
   DEPTNO NUMBER(2) CONSTRAINT pdept_fkey REFERENCES
DEPT
      ON DELETE CASCADE);
```

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Candle loosens licensing options

Follows trend toward tiered pricing and more flexible payment terms

By Thomas Hoffman
SANTA MONICA, CALIF.

Candle Corp. last week ushered in a new suite of licensing and maintenance alternatives for its predominantly IBM mainframe customer base that appears strikingly similar to the plan outlined by Computer Associates International, Inc. last April [CW, April 20, 1992].

Under Candle's "Flex Pricing" initiative, users will have the option of licensing their software based on enterprisewide contracts tied to use, millions of instructions per second-based pricing and other alternatives. Candle is also offering several new maintenance models.

Candle executives said they expect the licensing options to help the firm increase sales of its automated performance management products. However, some analysts said they are part of a broader move by mainframe software vendors seeking to stem the flow of users who have been moving off their legacy systems onto cheaper yet powerful client/server architectures.

AS/400 on tap

Candle has been developing performance management products for IBM's Application System/400 minicomputers, which IBM will market and introduce later this month, Candle executives said.

However, one analyst said Candle's announcements go beyond its rivals' practices. "We like Candle's approach [to alternative licensing options] better than most other vendors, including CA, because it provides long-term predictability on software costs while lacking many of the 'gotchas' that some vendors have employed," said Bill McNee, vice president and service director at Gartner Group, Inc.'s Software Asset Management Services in Stamford, Conn.

For example, McNee said, Candle's strategy was not designed to lure customers into expensive enterprisewide agreements for the sake of retaining customers for lucrative long-term agreements, unlike the tack taken by other vendors. "Many other vendors have the carrot-and-stick approach. This is more of a carrot," McNee said.

Myriad options

Candle, which has negotiated private licensing options with more than 50 customers, formalized several of those arrangements. Along with tiered pricing, which is based on the type of CPU the software runs on, the company has added nontiered pricing for a single price for software, regardless of CPU group. Other options include the following:

- Enterprise licensing, based on software use.
- Perpetual licenses with a onetime fee.
- Installment purchases.
- Rental or leasing options.
- Credit for trade-ins of rival products.

"This makes it very easy for customers to pick up some of our new products," said Vince Niezielski, Candle's vice president of information systems management. Candle hopes the new licensing initiatives will prompt customers to purchase more of Candle's automated performance products, including AF/Operator, AF/Performer and AF/Remote, which currently constitute a combined 7% to 10% of Candle's revenue. "Twenty percent of our installed base have these automation products. We'd like to double that over the next year or two," he said.

Analysts added that vendors such as Candle have a vested interest in offering flexible pricing to retain their customer base. "Now that mainframes are not selling that well, vendors have to make it attractive for customers to buy their goods, and Candle is primarily a mainframe vendor," said Shaku Atre, president of Atre, Inc., a consultancy in Rye, N.Y.

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NT knockout sought with Portable OS/2

CONTINUED FROM PAGE 1

RISC systems that will function as concentrated E-mail servers and database servers," said Cary Serif, manager for applied technology at Huntington National Bank in Columbus, Ohio. "Having a portable OS/2 is extremely important to maintain compatibility with existing applications."

However, in its race to deliver a portable OS/2 on a RISC platform, IBM is definitely trailing behind Microsoft. By the time of NT's expected launch in June, it will have been ported to RISC systems from Digital Equipment Corp., Mips Technologies, Inc. and Integraph Corp.

"The second phase of NT is very stable and very fast. You don't see any of the slowdown you would expect to see in a new, large operating system. And it's as easy to load as Windows," said John Donovan, an industry analyst at WorkGroup Technologies, Inc., a market research firm in Hampton, N.H.

Common interface

IBM plans to provide its three major desktop system environments with a common graphical environment via OS/2's WorkPlace Shell utility.

This effort will result in extending the WorkPlace Shell's support to DOS, AIX and the object-oriented operating system currently under development by IBM and Apple Computer, Inc.'s Taligent joint venture, said Larry Loucks, director of software architecture of Personal Systems at IBM.

Driven by IBM's need to create a common interface across its DOS, OS/2 and AIX operating systems, the company has been working with the OSF to integrate its WorkPlace Shell utility with the Motif graphical user interface (GUI).

This project was designed to provide the Motif GUI with an object-oriented desktop manager that will allow Unix users to access files in a manner similar to the one employed by Apple's Macintosh file system.

Currently, Unix sites that opt for Motif applications are required to purchase desktop manager software as a separate product from vendors such as Visix Software, Inc. in Reston, Va., and IXI Ltd. in England. —*Michael Vizard*

Layer by layer

To compete with NT and variants of Unix on RISC platforms, Portable OS/2 takes the current file system used on Intel processors and layers it on top of the Mach micro kernal developed by Carnegie Mellon University in Pittsburgh. The Mach micro kernal is the operating system technology IBM intends to use to make OS/2 an open system available on both Intel and RISC system platforms.

"Initially we'll support the PowerPC, with support for other RISC platforms determined by customer demand," Loucks said.

Once OS/2 is moved to the Mach micro kernal, IBM will add support for symmetrical multiprocessing, multiple users and higher levels of security, Loucks said.

Working in conjunction with the Open Software Foundation (OSF), which is also using Mach as the basis of a future iteration of its OSF/1 operating system, IBM has developed a micro kernal that can support multiple file systems concurrently, Loucks said.

Last year IBM demonstrated DOS, Windows, OS/2 and its AIX operating systems running concurrently on top of a Mach micro kernal. That work has progressed to the point where IBM has completed the "de-Unixification" of the Mach micro kernal, Loucks said.

Nearing fruition

One of the fruits of the IBM/OSF collaboration is that the next major release of the OSF's Motif graphical user interface will incorporate many of the attributes of IBM's WorkPlace Shell utility and become a true desktop manager for Unix systems.

"Mach was originally developed out of Unix research, so Unix was the dominant personality. Working with OSF, we've made it more personality-neutral," he said.

As part of that effort, the micro kernal supports only interprocess communications, threads, address space, low-level virtual memory and I/O objects, while supporting elements such as default anonymous pagers and device drivers residing in user space above the kernal, Loucks said.

By keeping the base functions of a multitasking operating system to a minimum in the kernal, IBM can layer any file system on top of a Mach micro kernal, which is now smaller and more storage-efficient than the original Mach micro kernal developed by Carnegie Mellon.

Loucks declined to speculate on the impact a separate portable version of OS/2 would have on IBM's current OS/2 offering for Intel systems. He said IBM will support both Portable OS/2 and the current version of OS/2 on Intel concurrently. Version 2.1 of OS/2, which is slated for general release this quarter, is now in beta testing.

No problem

Suppliers of application software for OS/2 noted that moving a 32-bit OS/2 application to the portable version of OS/2 should be a straightforward process. "We expect moving to Portable OS/2 will be a relatively simple recompile and run. It won't be a major port," said Hilmi Ozguc, senior product manager at Lotus Development Corp. for its 1-2-3 spreadsheet on OS/2.

Loucks added that he expects to compete with NT at about the same time NT becomes a viable offering at end-user sites because many of the initial applications for NT will not take advantage of the operating system's multithreading and security features.

Many NT developers are focusing their efforts on a subset of the Win-32 Application Programming Interface (API) that lets their applications run under both NT and Windows 3.1.

In order to accomplish this, the subset of the Win-32 API provided by Microsoft allows developers to create NT applications that do not support multithreading and security in the first iteration of their NT applications.

Promises fly in OS share battle

CONTINUED FROM PAGE 1

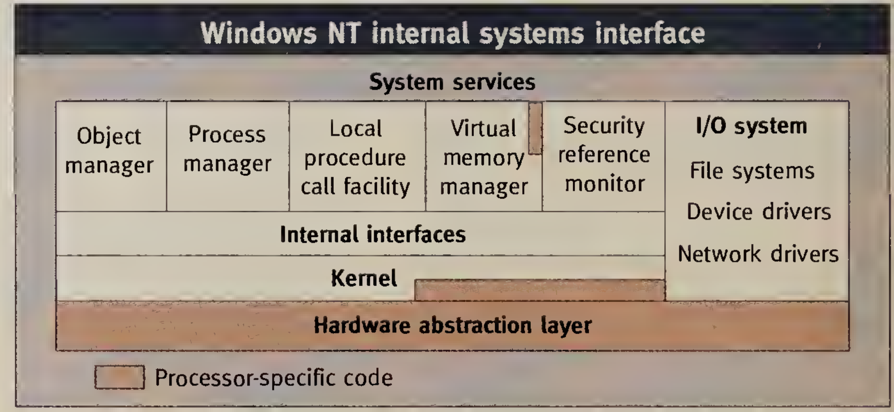
its muscle behind UnixWare, IBM making significant upgrades to OS/2 and both IBM's Portable OS/2 and Microsoft's Windows NT finally shipping.

"I do think it's going to be a battle royale this year, and users will see IBM, Microsoft and Novell throwing enormous market clout into the process," said Kevin O'Neill, vice president of Business Research Group in Newton, Mass.

Each product has strengths and weaknesses and varying levels of importance to users.

Larry Waibel, systems software technical specialist at Cubic Automate Revenue Collection Group in San Diego, said that while his company is moving to OS/2, Unix still has some abilities that make it useful. Some of the company's projects, for example, require multiple user interfaces to one box — a capability OS/2 does not have yet and one that NT will provide only through a third-party software vendor. "That's where Unix is still ahead," he said.

Windows NT internal systems interface



However, putting Unix in front of end users is something Waibel said he would rather avoid because it requires systems administration tasks that many users deplore. "With OS/2, you just install it and configure your desktop," he noted.

Another user said he sees different battle lines developing.

"When we start putting mission-critical stuff in the client/server world, I suspect it's going to be a Unix vs. NT thing," said William R. Conley, manager of information systems services at Loral Aerospace Corp. in Newport Beach, Calif. "I think IBM has really dropped the ball on the direction for OS/2."

Race for heart share

Application support for the three platforms, which Conley said is key, is still an evolving scenario. "Whoever wins the hearts and minds of the software developers wins the game," he said. "I think it's probably a '93 or early '94 decision for most people."

Unix boasts several thousand applications, but few match up to the personal productivity applications DOS users enjoy. Microsoft claims that hundreds of mainstream Windows NT applications will be available this year, but the performance of the existing thousands of 16-bit applications under NT emulation remains a question mark. And while IBM brags of more than 1,200 OS/2 2.0 applications, sales have yet to make more than a blip on the charts.

As NT makes the transition from rumor to reality, the Unix industry in particular is paying close attention.

"I don't know of a single Unix [independent software vendor] that isn't considering or evaluating NT now, and that's at least partly out of fear," said D. J. Long, director of marketing at Applix, Inc., a Unix software vendor in Westboro, Mass.

Rikki Kirzner, an analyst at Dataquest, Inc. in San Jose, Calif., agreed. Kirzner recently did a feature-by-feature comparison of UnixWare and NT and concluded that the differences were negligible. "If I were to redesign Unix, putting in all the strengths and getting rid of all the weaknesses, NT is what I'd come up with," she said.

Still, NT's domination is far from guaranteed, as questions about its release schedule and functionality continue to surface [CW, Jan. 25].

Maturity levels will be vital for any of the new operating systems to wind their way into the inner sanctum of corporate management IS.

Michael Packer, Bankers Trust Co.'s managing director of technology strategic planning, ticked off a list of "industrial strength" features that are essential for any next-generation operating system running mission-critical applications: monitoring and management tools, recovery tools and security administration.

Packer echoed the wait-and-see attitude of most users these days when asked which desktop contender had the necessary qualities. "They're getting close, but none of them are there yet," he replied.

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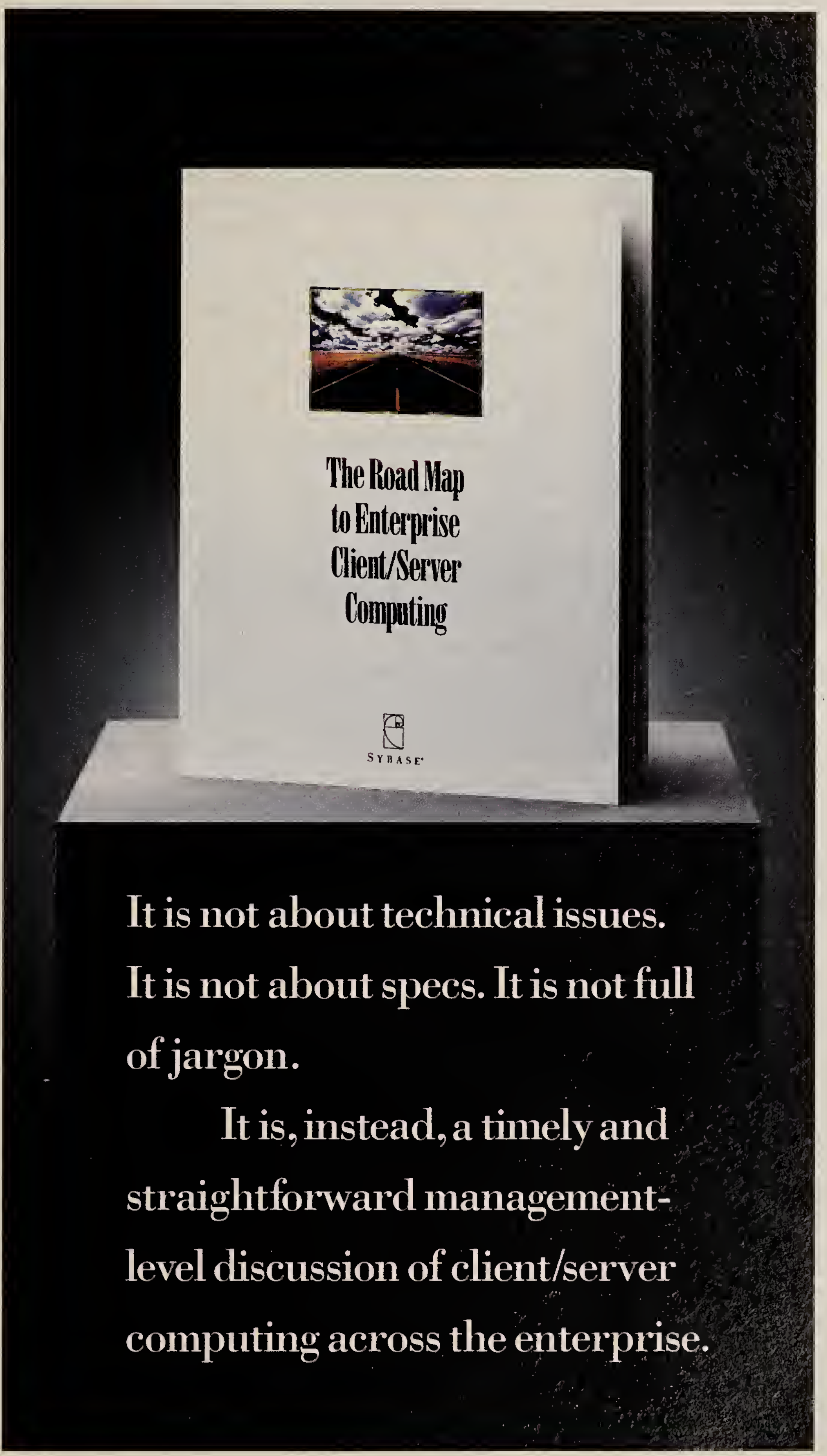

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Advantis' expands service menus; serves up First Interstate contract

By Elisabeth Horwitt
WASHINGTON, D.C.

Advantis, the IBM/Sears Communications Co. joint network outsourcing venture, last week announced "full-blown network outsourcing" services that will include the design, operation and management of customers' voice, data and video networks.

The Tampa, Fla., company also announced its second network outsourcing customer, First Interstate Bank. Under a three-year contract, Advantis will manage and operate the bank's leased-line network, which connects 993 branch offices in 13 western states to First Interstate's two data centers. The network consists of StrataCom, Inc., Network Equipment Technologies, Inc. and Ascom Timeplex switches.

IBM's advantage

Advantis builds on IBM Information Network Services by adding:

- Custom Network Solutions offers to implement, operate and manage customers' voice, data and video WANs.
- EDI over X.400 connections.
- Bulletin board services.
- TCP/IP-based LAN-to-LAN routing.

Source: Advantis

First Interstate will retain management of its logical IBM Systems Network Architecture (SNA) network, while Advantis will "deal with the vendors and make decisions about new technology in concert with them," an Advantis spokesman said.

Advantis announced its first contract — with Ford New Holland — late last year.

Value-added services

Along with its Custom Network Solutions offering, Advantis added some services to the portfolio of value-added services previously offered by IBM Information Network. Those services are the basis for the joint IBM/Sears venture.

The most significant of the new offerings is a local-area network internetworking service. Its main targets are IBM customers that are moving down to LANs and want high-speed networks to interconnect those LANs to one another and to SNA installations, a spokesman said.

The new services will help Advantis go after the huge installed base of U.S. companies that are migrating from SNA to distributed networking, said Berge Ayvazian, a vice president at Boston research firm The Yankee Group.

This is an area where Advantis — made up as it is of two companies with extensive SNA expertise — has a big advantage, Ayvazian added.

The new service will link devices on Ethernet and Token Ring LANs and will support popular LAN protocols such as Transmission Control Protocol/Internet Protocol (TCP/IP), Novell, Inc.'s IPX and NetBIOS, as well as SNA. The network will run on leased lines now, with migration to Asynchronous Transfer Mode at an undisclosed date.

The service will also provide gateways between TCP/IP and SNA environments. Advantis is planning conversion services to enable applications on different systems to communicate.

Advantis will offer network management services for LAN internetworks based on Cisco Systems, Inc., Wellfleet Communications, Inc. and IBM routers as part of a packaged offering, plus customized management of other types of backbone devices, the IBM spokesman said.

ATM hype yields to market reality

By Joanie M. Wexler
WASHINGTON, D.C.

Asynchronous Transfer Mode (ATM) skeptics took center stage at last week's Communication Networks Conference and Exposition (ComNet) '93 when AT&T became the second long-distance carrier to announce ATM service rollout plans.

Users and analysts remained bullish on the concept of the high-speed, switched data network and its eventual usefulness and longevity. However, ATM is following a similar pattern of other technologies, such as Integrated Services Digital Network (ISDN) and frame relay, that were hyped in the early stages: a heavy buildup followed by technical and economical limitations.

As a result, outstanding unknowns of what the service will cost, what it will be used for and where its vulnerabilities lie are tempering its promise for the near future.

Frightening speeds

"ATM's very high speeds are scary if something goes wrong," considering standards are not yet in place for dealing with dropped cells, said Thomas J. Reilly, director of communications at Toys R Us, Inc. in Rochelle Park, N.J. "And I don't see a lot of people hawking ATM test gear here on the floor. ATM is so new; maybe it's not the one to catch the arrows on, though I like its concept of blending LANs and WANs and its scalability."

"ATM is not fully developed enough yet for us to use it, and we need to know when it will be," added David W. Siebert, technical support manager at Boeing Computer Services in Seattle, who attended the show. Boeing already has applications that justify the need to run more than 140 T3 (45M bit/sec.) links today.

"We got involved early with ISDN, and it fell through," which the company would prefer not to experience again, he said.

Some information on availability was forthcoming. AT&T said last week it would have "controlled ATM service availability" by the first half of 1994.

Competitor Sprint Corp. has already said it will offer general ATM service by early 1994.

AT&T's cautious announcement was in sync with such concerns, analysts said. The carrier said it is establishing an ATM Customer Advisory Council, to be made up of a cross-section of industries such as manufacturing, health care, retail and transportation, to set priorities and run trials for making ATM a "useful service, not just a technological novelty," said JoAnn Patrick-Ezzell, director of data communications services at AT&T.

For example, desktop-to-desktop video "would have to play some part in ATM [cost] validation," said Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "But we don't know yet if these applications would even make us more productive" without experience with the technology.

The catch-22, he said, is that testing the service could be too expensive for most users. CIMI studies, Nolle said, indicate that the average company's network applications cost about $1,500 in monthly recurring charges for two end points. ATM, which will at a minimum add an overlay to already pricey T3 links, "could cost $12,000 before you do much of anything with it."

A new study on ATM by Infonetics Research, Inc., a consultancy in San Jose, Calif., agreed that price is the greatest barrier to ATM acceptance.

Frame relay pumped up

CONTINUED FROM PAGE 1

has been making plenty of money with leased-line contracts.

In addition, AT&T does not publish its frame-relay rates and requires customers for whom it prices a frame-relay network to sign a nondisclosure agreement on the information.

Some observers argue that this procedure has slowed competition and stalled frame relay's progress.

Nondisclosure challenged

In fact, these tactics were challenged in one ComNet conference session on public frame-relay pricing. Users, AT&T, MCI and public frame-relay market share leader WilTel butted heads about the effect keeping price lists close to the vest has on costs.

Carriers WilTel and AT&T explained that they do not post price lists on every street corner because pricing matrices are too confusing for users and because users need carrier input to optimize network design.

However, "I find it hard to believe it would be detrimental to users to reveal pricing," said session attendee John Capetanakis, director of network engineering at Science Applications International Corp. in McLean, Va. "On the contrary, I would think prices would come down and volume would go up."

About 90% of leased lines run less than 1,500 miles — the distance where frame relay becomes more economical, according to Paul Weichselbaum, vice president of data product marketing at MCI.

"Pricing shouldn't be a mystery," agreed Ray Kang, senior frame-relay product manager at MCI. "We think users are smart" and will know what to do with the information, he said.

This is a turnaround for MCI, which Dataquest estimated has about an 8% frame-relay market share behind WilTel, AT&T, Sprint Corp. and CompuServe, Inc. Until it uncloistered its price schedule last week, MCI had the same policy as AT&T.

While WilTel does not publish general price lists, neither does it follow the AT&T practice of requiring potential users to sign nondisclosure forms.

Not alone

Pricing is not the only issue giving users pause in a frame-relay market that brought in barely $20 million in its first year, according to calculations by Boston consultancy The Yankee Group.

"Most users are confused about where frame relay and ATM fit and are worried about frame relay already being obsolete," said show attendee Robin Layland, a telecommunications engineering consultant at The Travelers Corp. in Hartford, Conn. "In reality, frame relay is very reliable at T1 speeds and below for just running data."

Travelers, an AT&T Tariff 12 customer, however, looked at frame relay, and "our vendor said leased lines were the way to go," Layland said.

However, "if we weren't a Tariff 12 customer and didn't already have a T1 multiplexer network," Travelers might be using frame relay, he said.

Contractual pitfalls

Outsourcing hits human snag

By Elisabeth Horwitt
WASHINGTON, D.C.

The biggest potential pitfalls to network outsourcing are not technological but human, according to network outsourcers and would-be outsourcers attending a session at Communication Networks Conference and Exposition last week. But if those pitfalls can be surmounted, there are financial gains to be realized.

"It is more difficult than you would expect" to make the changeover from an internally managed network to one that is operated by an external organization, said panelist Katherine Korostoff, director of research at Newton, Mass., research firm Sage Network Research. "Human [issues] are the No. 1 complex issue."

Revenue uptick

A Frost & Sullivan study predicted that revenue from the network outsourcing market will more than triple, from $2.6 billion in 1992 to $8.4 billion in 1997.

Korostoff cited the famous case of Eastman Kodak Co., whose employees filed suit a couple of years ago claiming that they did not receive the benefits and job security they were promised as part of Kodak's network outsourcing contract with Digital Equipment Corp. That suit is still pending.

Panelists confirmed audience members' fears that network outsourcing can cause trouble. Among the problems cited were employee discontent because of job insecurity or salary inequities, data security risks and long-term vendor relationships that cannot be severed without financial penalties.

Marty Colburn, director of data communications at the Federal National Mortgage Association (Fannie Mae), noted that pay inequities — and, therefore, employee dissatisfaction — can result when in-house telecommunications staff members must work alongside an outsourcing vendor's people.

One audience member veered off in another direction by asking how the panelists prevented users from buying their own systems if they felt that an outsourcing vendor was not doing a good enough job. Some of Colburn's users in fact did that, but "their systems were up 40% of the time, and ours were up 99%," he said.

Network security issue

A greater concern was reflected by one network manager who noted that network outsourcing poses data and system security risks. "If you outsource your transport network or network management, they get into your system," the audience member said.

Fannie Mae's solution is to have six security levels and to put outsourcing vendors "under nondisclosure and noncompete agreements for 18 months after the contract ends," Colburn said.

The Environmental Protection Agency (EPA), which has to rebid its outsourcing contract periodically under federal law, is "more concerned about willful destruction by an angry incumbent employee who is leaving when a new outsourcing vendor is hired," said panelist David Bittenbender, the EPA's chief of telecommunications. "It hasn't happened, but how do you protect yourself? I just cross my fingers."

The panelists also addressed the difficulty of breaking relations with an outsourcer once the contract has been signed. Korostoff cited a firm that was penalized for breaking a contract with Electronic Data Systems Corp. when it moved from mainframes to client/server systems.

The EPA, like all government agencies, puts an escape clause into its outsourcing contracts as a matter of course, Bittenbender said.

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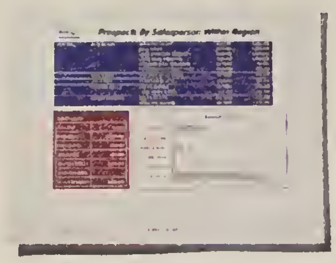

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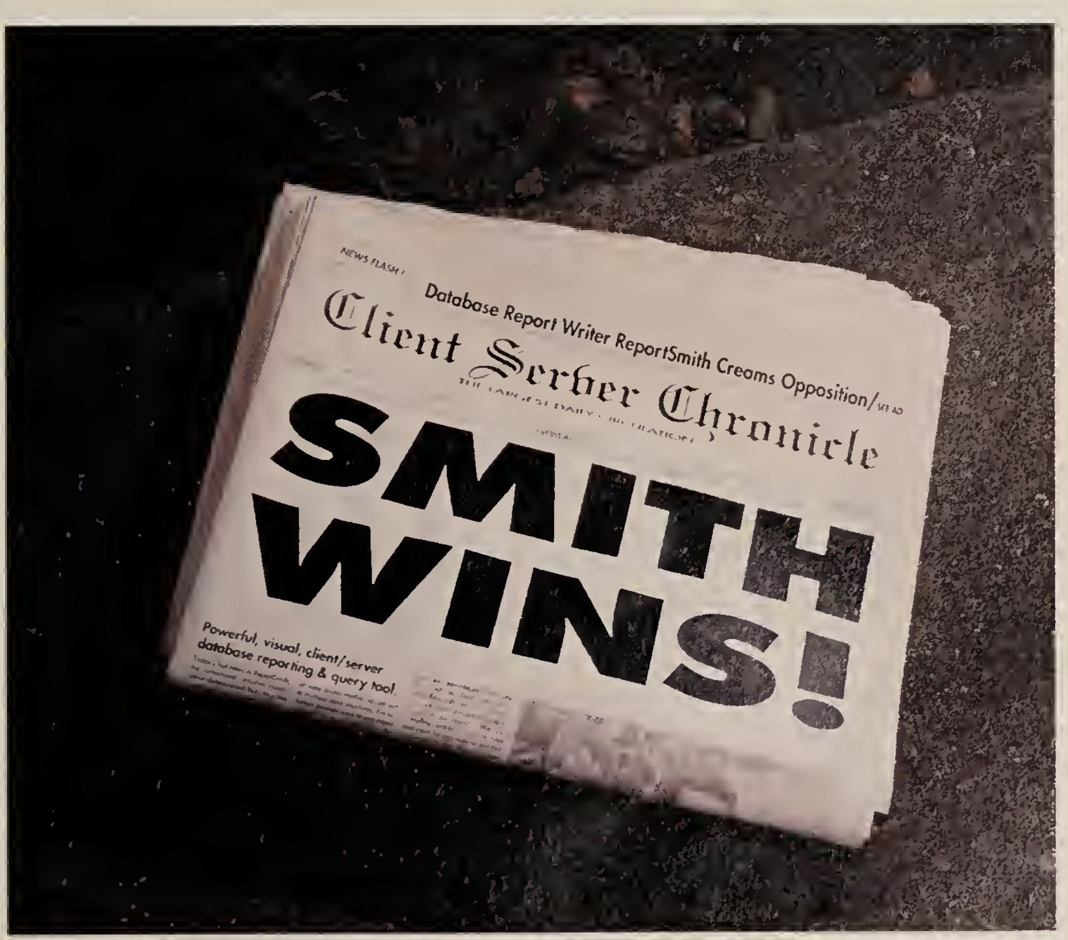
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News Shorts

FTC holds off on Microsoft decision

The **Federal Trade Commission** (FTC) issued a statement last Friday, saying it had not reached a final decision in a "nonpublic law enforcement matter" that is widely believed to be the **Microsoft Corp.** antitrust investigation. The FTC said it will reconvene "in the near future," although no further details were available. While previously published reports indicated FTC lawyers were seeking an injunction against Microsoft, it appears that commission members were either unable to reach an agreement or could not come up with the three votes needed to take such measures. For its part, Microsoft will continue to cooperate with the FTC and the business will continue as usual, according to a spokeswoman. Meanwhile, **Novell, Inc.**, which is believed to be preparing an antitrust class-action suit against Microsoft, declined to comment on the FTC statement. Microsoft's stock price, which had been slipping earlier in the week, rebounded four points in reaction to the commission's statement.

Rollwagen gets No. 2 Commerce post

Cray Research, Inc. Chairman John A. Rollwagen has been tapped for the No. 2 post at the **U.S. Department of Commerce,** which President Clinton has said he wants to strengthen and give a key role in boosting U.S. technological competitiveness. As a member of the Computer Systems Policy Project, Rollwagen has advocated a strong role for the government in helping the industry establish a high-speed national data internetwork and has said the government should shift billions of dollars in defense research to "commercially relevant activities" that foster advances in semiconductors, high-speed communications and software.

Sequoia, Ultimate settle suit

Sequoia Systems, Inc. and **The Ultimate Corp.** settled their pending lawsuit out of court last week when Ultimate agreed to a nonexclusive reseller pact for Sequoia's fault-tolerant system products. Ultimate, a New Jersey-based hardware and software distributor, filed suit last November alleging Sequoia had interfered with Ultimate's dealer and customer relationships. No financial terms were disclosed, but Sequoia is now free to sell its products directly to Ultimate's customers.

Armco Steel outsources to ISSC

IBM's **Integrated Systems Solutions Corp.** outsourcing subsidiary last week chalked up its seventh outsourcing contract in two months, signing Middletown, Ohio-based **Armco Steel Co.** to a 10-year deal. Neither side disclosed the value of the contract except to say that Armco expects to save $100 million. ISSC is offering jobs to all 90 Armco information systems employees; the shop had 200 staff members until recent layoffs. The outsourcer also picked up an unspecified amount of excess mainframe capacity that it will use to process other customers from Armco facilities.

Tuxedo enhancements expected

Unix System Laboratories, Inc. will announce new features for its Tuxedo enterprise transaction processing software next week, boosting the product's appeal to users with Unix on-line transaction processing needs. Among the new features expected in Tuxedo Release 4.2 are reliable message queuing, extensions to the Tuxedo/Workstation product and dynamic linked libraries for Microsoft Windows and IBM OS/2, which allow developers to use familiar desktop software as clients to the Tuxedo system.

DEC plays cluster card

GigaSwitch hub groups VMS systems across an FDDI network

By Melinda-Carol Ballou
and Michael Vizard

Digital Equipment Corp. is expected to fundamentally revamp its VMSclusters next month when it delivers its GigaSwitch hub, according to sources briefed by DEC. The hub makes it feasible to group systems in clusters across a 100M bit/sec. Fiber Distributed Data Interface (FDDI) network that can span 2 kilometers between nodes.

GigaSwitch will extend VMSclusters by providing virtual circuit links among nodes in the cluster over a 100M bit/sec. FDDI link. Because of its switching capabilities, it will allow DEC users to build clusters in which individual nodes can send traffic directly to each other across the network using virtual circuit technology usually associated with telecommunications equipment. Moreover, users will be able to dynamically make any node in one cluster a member of any other cluster attached to the GigaSwitch.

"What [GigaSwitch] with FDDI will give you is 10 times the potential throughput of an Ethernet backbone," claimed Gailyn Casaday, product manager at DEC.

Currently, VMSclusters are not linked over FDDI but are either hard-wired together in a single location or linked over a 10M bit/sec. Ethernet using DEC's local-area VMScluster software.

From DEC's perspective, GigaSwitch functionality is important because VMSclusters are a key foundation block that DEC uses to compete against IBM mainframes.

By grouping VMS systems in clusters that share disk storage in a configuration that is managed as a single logical entity, DEC has been able to deploy clusters that offer the equivalent horsepower of an IBM mainframe in an easily upgradable system package.

However, DEC is also targeting non-DEC sites with the technology, which was designed to bring standard high-speed switching capabilities to a range of environments, according to the firm.

Matrix management

GigaSwitch is a crossbar switch, which means it manages a 36 by 36 port matrix. Each port can send and receive at the same time. The switch acts as a traffic cop to make the connection between the ports. When all ports on the matrix are sending and receiving simultaneously, they can achieve a rate of 6.25 million packets per second.

The switch is used with multiple FDDI links, where each port offers 100M bit/sec., a forwarding rate of 290,000 packets per second, per port, Casaday said. Such speeds will satisfy the requirements of high-bandwidth applications such as the visualization and multimedia projects that New York University is examining.

"We're definitely interested in the technology — it strikes me as one of the most innovative and flexible products in its market niche," said Stephen Tihor, research scientist at the university.

Tihor is currently interested in supporting multiple FDDI links and ultimately in bringing in Asynchronous Transfer Mode (ATM) as an interface for GigaSwitch.

Users have been bombarded by the notion that ATM is the coming revolution for carrying real-time information and packet data, as well as for uniting local- and wide-area networks, and they are worried about making the transition. With GigaSwitch, "we are not buying an infrastructure that locks us in," he said, suggesting that that technology will allow users to switch to ATM.

Industry sources said a plain GigaSwitch with CPU and time module is not expected to exceed a price of $30,000; a two-line FDDI card will be priced at $9,000; a GigaSwitch systems module will be priced at $16,000; fiber attachments are expected to be $900 for a multinode and $3,200 for single node, the sources said.

Faulty systems hinder GAO audit of troubled pension insurance fund

By Gary H. Anthes
WASHINGTON, D.C.

Flawed information systems have undermined the ability of the government's pension insurance agency to manage its multibillion-dollar portfolio, the U.S. General Accounting Office (GAO) told Congress last week.

Testifying before a House oversight panel, Joseph F. Delfico, director of income security issues at the GAO, cited estimates by the Pension Benefit Guaranty Corp. (PBGC) that the private pensions it insures are underfunded by $51 billion — up from $30 billion two years ago.

This includes some $12 billion owed by financially troubled companies that are "reasonably possible losses" to the agency. At the end of 1991, PBGC had $8.75 billion in assets.

However, Delfico said the GAO had been unable to audit PBGC's books because of weaknesses in its financial systems, including the software used to estimate liability for future benefits. He added that the PGBC did not have an operational general ledger system for six months in 1990.

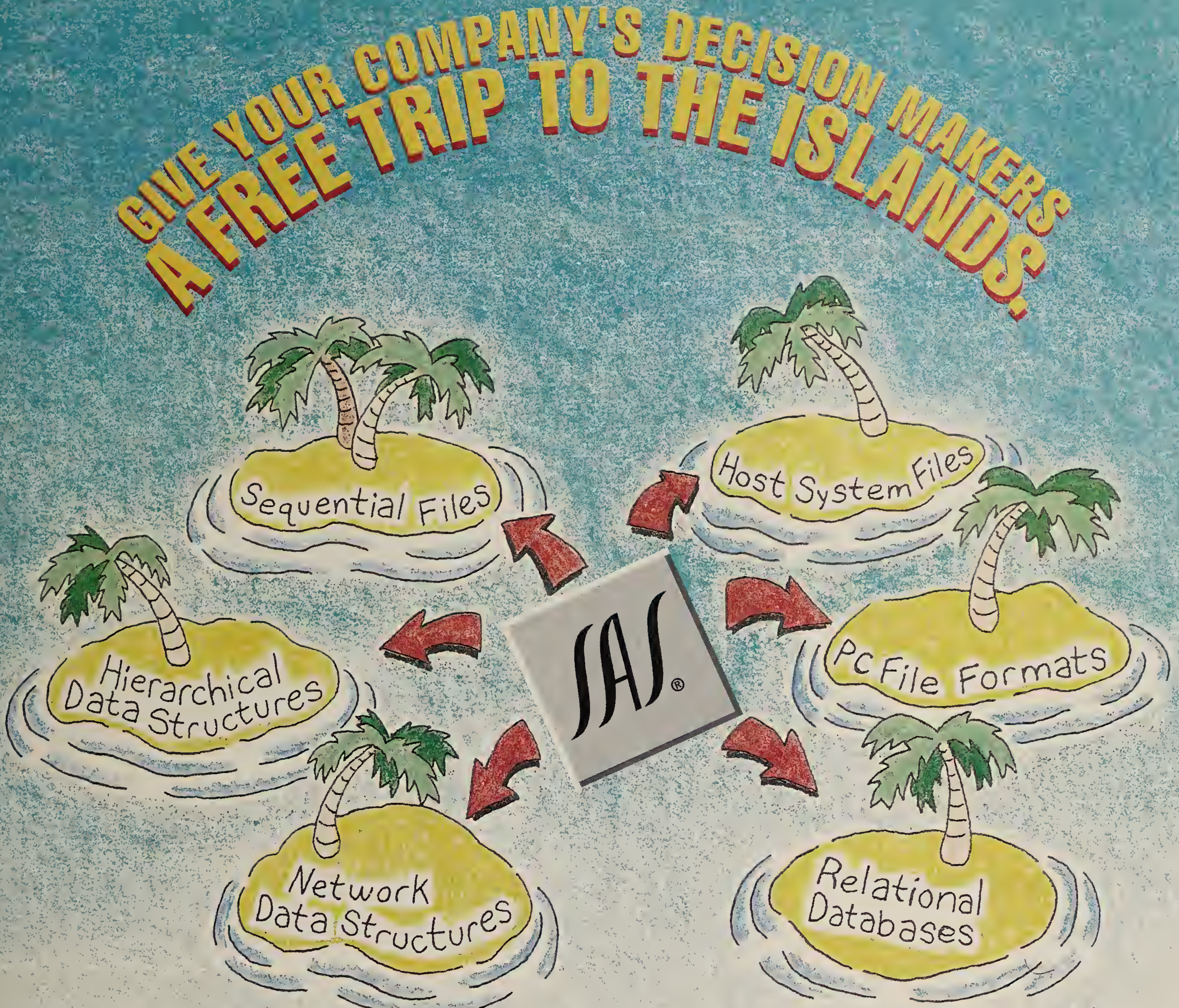
Delfico also cited "serious problems" with the system used to account for collection of pension insurance premiums, PBGC's principle source of revenue. That system has not been fully operational since 1988, when the agency tried unsuccessfully to modify it to handle variable premiums.

Others likened the plight of PBGC, which insures the pensions of 41 million Americans in 67,000 private pension plans, with that of the now-defunct agency that insured savings and loan deposits.

"The federal pension insurance system has accumulated a sizable deficit. Unless the program is modified, this financial imbalance is expected to deteriorate significantly... resulting in a costly bailout of PBGC by U.S. taxpayers," said Robert D. Reischauer, director of the Congressional Budget Office.

Despite his criticisms, Delfico said the pension insurance agency had made substantial progress in correcting its management and systems problems, and the GAO would probably be able to conduct a full audit of its 1992 balance sheet.

However, "Even with improved management, PBGC has limited ability to control its exposure to losses from underfunded plans," he said.



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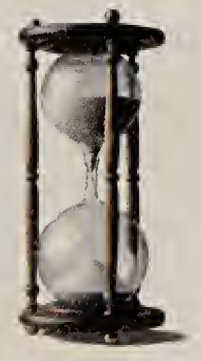

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Jeweler finds Chapter 11 to be a gem

CONTINUED FROM PAGE 1

ering the silver lining in Chapter 11: the chance to find innovative ways to cut costs, in some cases by renegotiating contracts [CW, Dec. 21].

"There would have been no renegotiation without Chapter 11," said Zale IS chief David Karney.

"Chapter 11 created a forum for renegotiating the contract that did not exist before," agreed Pat Caldwell, a partner at the Gordian Group LP, a New York firm that represents a group of Zale creditors.

ISSC paid cash to enter a 10-year deal with Zale in May 1991 — half a year before Zale entered bankruptcy protection. However, the outsourcer will soon agree to shorten its stay when the two parties sign a revised contract.

Karney would not reveal the length of the new fixed term, except to say it is no longer than five years, with renewal options.

Giving a clue that the new deal could be even shorter, Karney said Zale plans to begin migrating to client/server technology during the next three to five years. As a possible precursor to the client/server move, the new contract will shift PC and local-area network support staff back to Zale.

Charles Ansley, ISSC's vice president of marketing, also would not specify the new length.

Karney said Zale wanted the term reduction for maximum flexibility in adjusting data processing to match the size of the restructured company. That flexibility includes implementing a client/server scheme to offload the company's mainframe structure, he noted.

Karney said he expects to submit the revamped contract to bankruptcy court for approval later this month.

Zale's David Karney: *There would have been 'no negotiation without Chapter 11'*

Both Karney and Ansley confirmed that the new deal, by virtue of its shorter duration, will cost Zale less, although neither would say by how much. The two were also mum on whether the new deal will reduce annual or unit processing fees. But retail industry analysts and sources close to Zale's creditors said Zale has indeed negotiated a better unit price. Analysts' estimates of the original deal have reached as high as $286 million.

Perfect timing

The revision could not have come at a better time for Zale, as the current contract was believed to be following a typical long-term pattern in which fees increase over time. Zale had already benefited from the undisclosed cash infusion and from favorable first-year terms but was soon going to pay increasing rates it could have ill afforded.

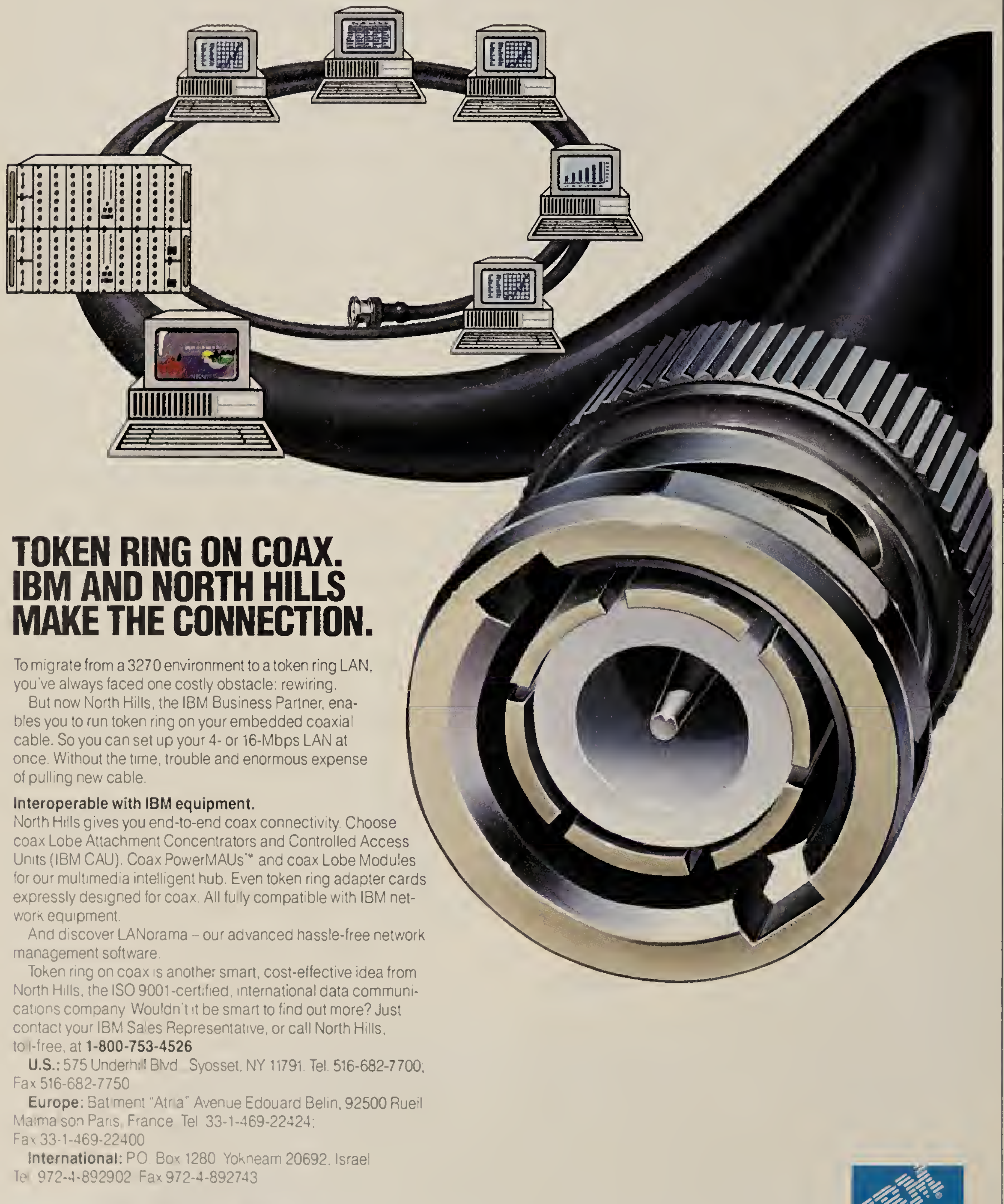
Analysts and sources in the creditors' community said creditors insisted on restructuring the deal when they learned that Zale had originally agreed to exorbitant later-year charges out of a desperate need for up-front cash.

"IBM basically gave them a year's free rent and cash up front, but the remaining terms were fairly out of line with what some people would have expected them to pay," observed Jeff Middleswart, a research analyst at Dallas securities firm Barre & Co. "The old contract had become too expensive."

Karney denied that assessment. He added that Zale considered two options other than restructuring the ISSC deal: changing outsourcers and bringing operations back in-house.

The company decided against switching vendors because that would have entailed the long process of familiarizing the new vendor with Zale's business, an ordeal with which ISSC was already far along.

Furthermore, Zale had already transitioned IS employees to ISSC, making the staffing issue problematic.



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International: P.O. Box 1280 Yokneam 20692, Israel Tel 972-4-892902 Fax 972-4-892743

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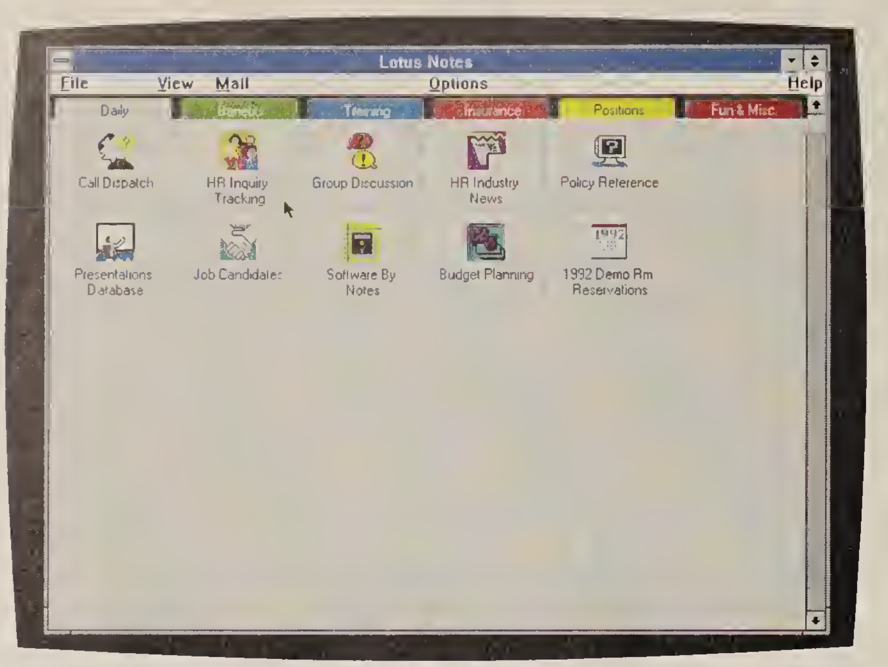
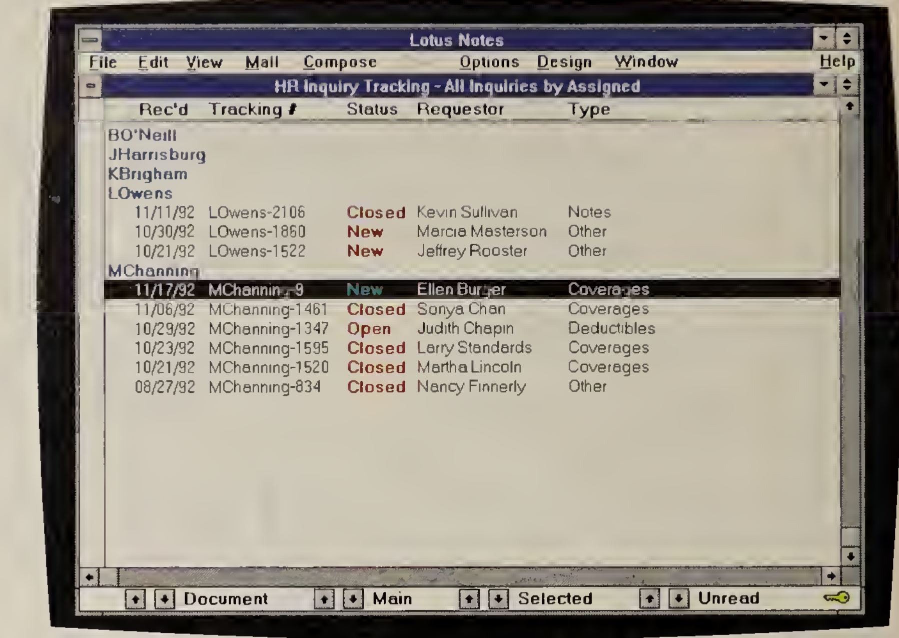


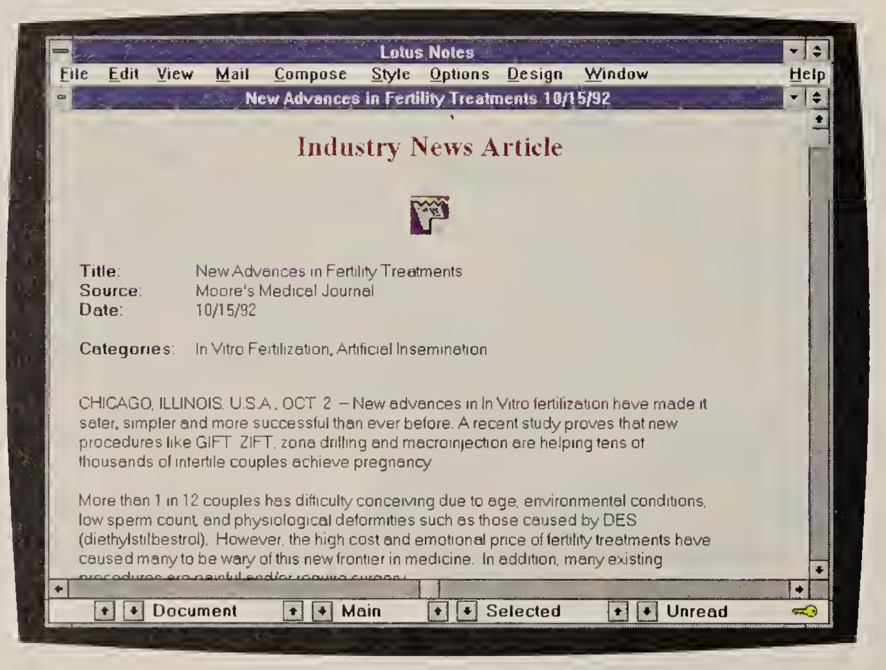
1. This is Mike's Notes desktop. Each icon represents a different database. In the course of the day, these are the ones he uses most frequently. To start the day, Mike decides to check if any new benefits questions have been forwarded his way. He double-clicks on the HR INQUIRY TRACKING icon.



```
   Rec'd    Tracking #       Status  Requestor          Type
BO'Neill
JHarrisburg
KBrigham
LOwens
   11/11/92 LOwens-2106      Closed  Kevin Sullivan     Notes
   10/30/92 LOwens-1860      New     Marcia Masterson   Other
   10/21/92 LOwens-1522      New     Jeffrey Rooster    Other
MChanning
   11/17/92 MChanning-9      New     Ellen Burger       Coverages
   11/06/92 MChanning-1461   Closed  Sonya Chan         Coverages
   10/29/92 MChanning-1347   Open    Judith Chapin      Deductibles
   10/23/92 MChanning-1595   Closed  Larry Standards    Coverages
   10/21/92 MChanning-1520   Closed  Martha Lincoln     Coverages
   08/27/92 MChanning-834    Closed  Nancy Finnerly     Other
```

2. HR Inquiry Tracking

Well, there's one that hasn't been read. Ellen Burger has a question about her coverage. Ellen called the company's BENEFITS HOTLINE. The operator entered her query into Notes and it was automatically routed to Mike. Mike double-clicks to find out what the problem is.



Industry News Article

Title: New Advances in Fertility Treatments
Source: Moore's Medical Journal
Date: 10/15/92

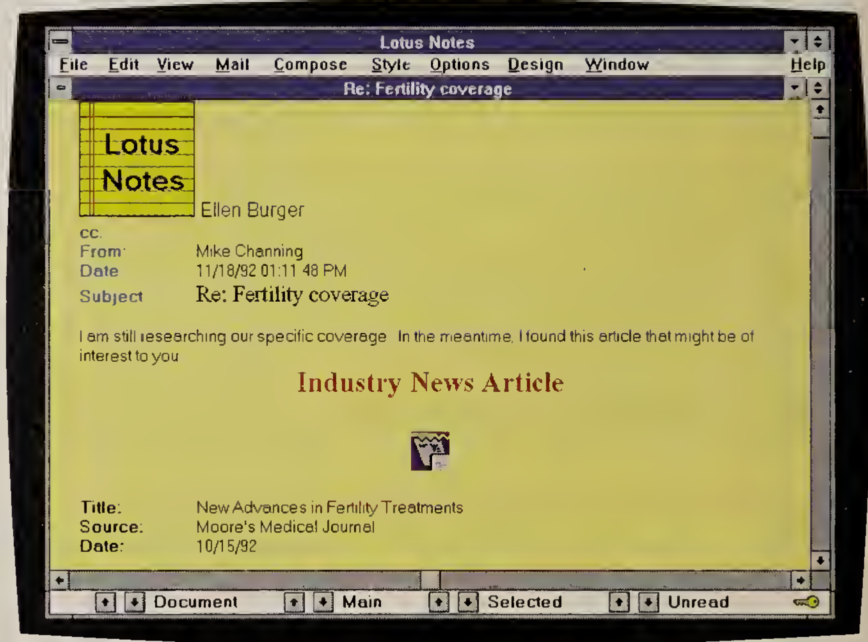
Categories: In Vitro Fertilization, Artificial Insemination

CHICAGO, ILLINOIS, U.S.A., OCT 2 – New advances in In Vitro fertilization have made it safer, simpler and more successful than ever before. A recent study proves that new procedures like GIFT, ZIFT, zona drilling and macroinjection are helping tens of thousands of infertile couples achieve pregnancy

More than 1 in 12 couples has difficulty conceiving due to age, environmental conditions, low sperm count, and physiological deformities such as those caused by DES (diethylstilbestrol). However, the high cost and emotional price of fertility treatments have caused many to be wary of this new frontier in medicine. In addition, many existing

5. HR Industry News

He simply double-clicks INDUSTRY NEWS, and searches two categories: In vitro fertilization and artificial insemination. First up is a recent story from Moore's Medical Journal. Since the article includes authoritative information, he decides to forward it to Ellen.



Ellen Burger
cc.
From: Mike Channing
Date 11/18/92 01:11 48 PM
Subject Re: Fertility coverage

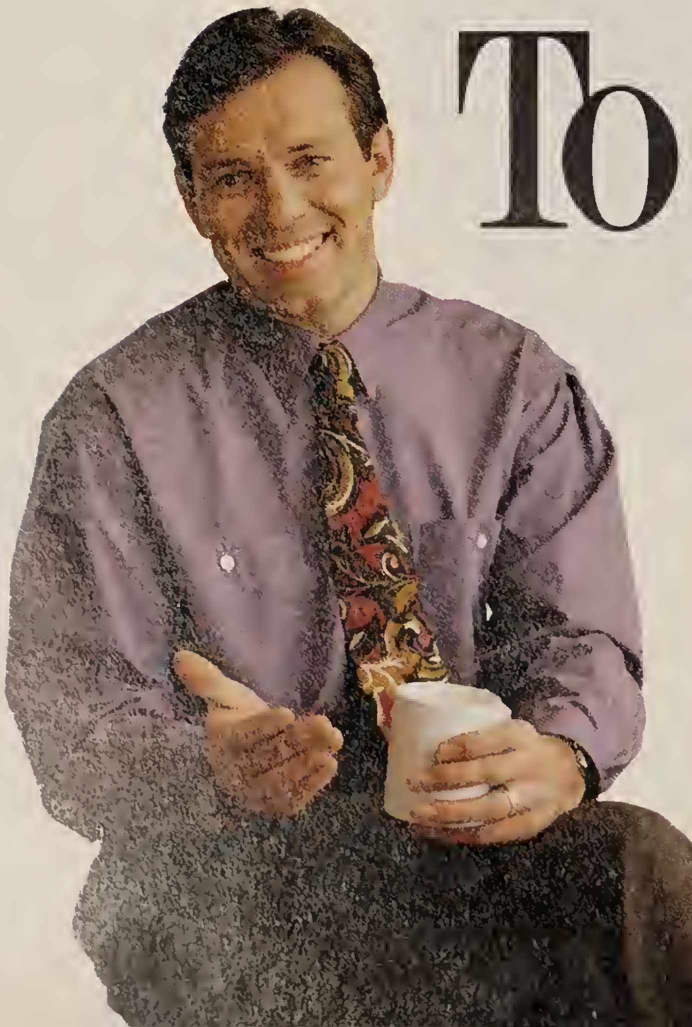
I am still researching our specific coverage. In the meantime, I found this article that might be of interest to you

Industry News Article

Title: New Advances in Fertility Treatments
Source: Moore's Medical Journal
Date: 10/15/92

6. HR Industry News

Mike quickly composes a note and forwards this document directly to Ellen. That done, he gets himself a cup of coffee.



To demonstrate th
had to make an

Mike Channing
Benefits Liaison

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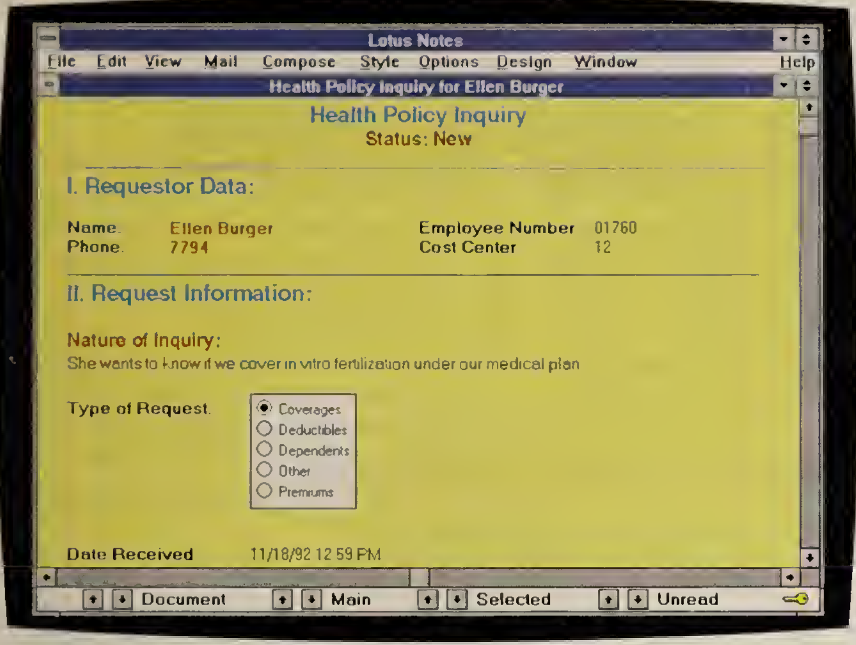

Lotus Notes
File Edit View Mail Compose Style Options Design Window Help
Health Policy Inquiry for Ellen Burger
Document
Main
Selected
Unread

Health Policy Inquiry
Status: New

I. Requestor Data:

Name: Ellen Burger
Phone: 7794
Employee Number: 01760
Cost Center: 12

II. Request Information:

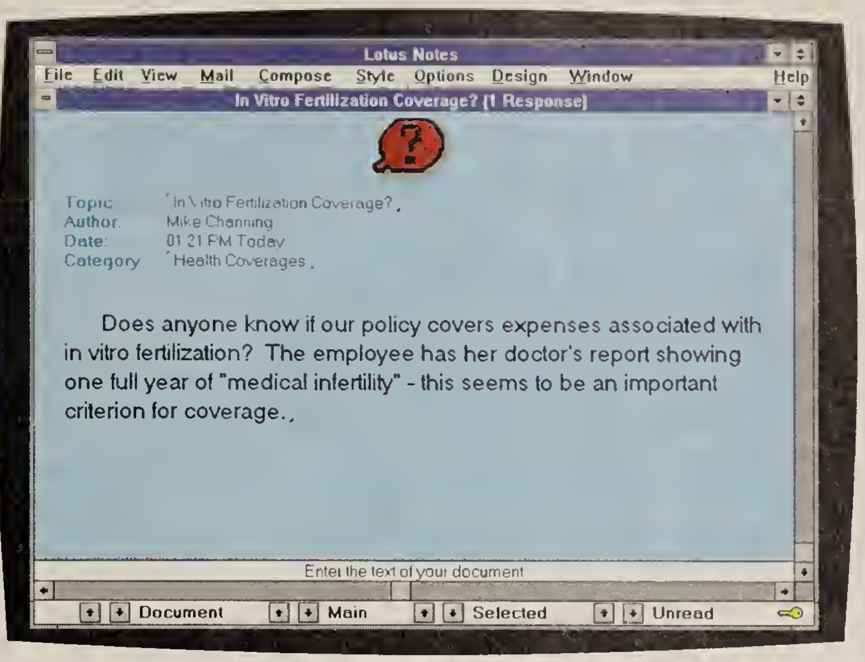
Nature of Inquiry:
She wants to know if we cover in vitro fertilization under our medical plan

Type of Request:
● Coverages
○ Deductibles
○ Dependents
○ Other
○ Premiums

Date Received: 11/18/92 12 59 PM

3. HR Inquiry Tracking

Up comes the inquiry screen. Ellen wants to know if the company covers in vitro fertilization. Mike, being new, is stumped. He calls his supervisor on the phone for the answer. He's not in yet. Instead of waiting, Mike decides to post the question on the GROUP DISCUSSION database, thinking that someone else might know the answer and respond more quickly.

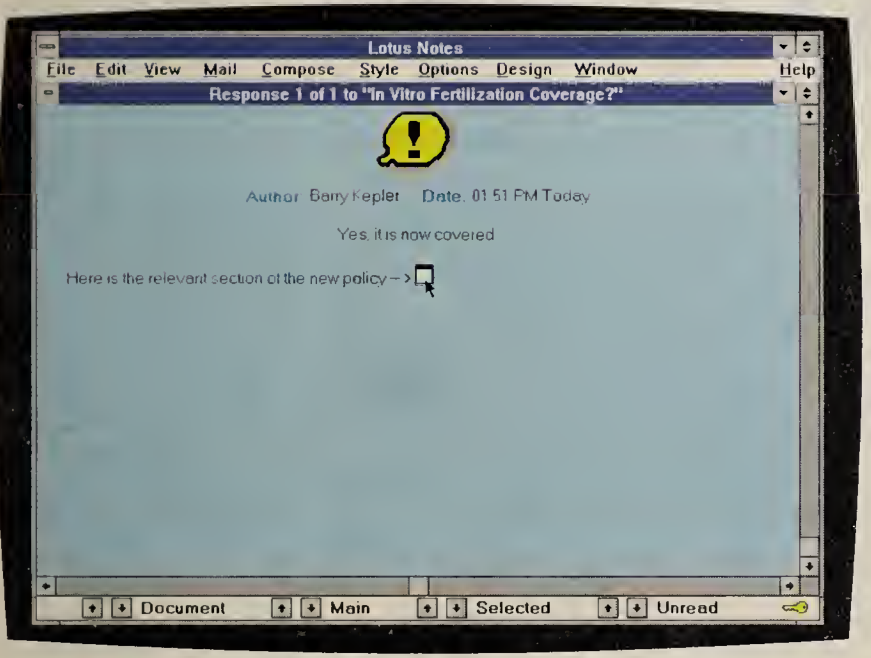

Lotus Notes
File Edit View Mail Compose Style Options Design Window Help
In Vitro Fertilization Coverage? (1 Response)
Enter the text of your document
Document
Main
Selected
Unread

Topic: In Vitro Fertilization Coverage?
Author: Mike Channing
Date: 01 21 PM Today
Category: Health Coverages

Does anyone know if our policy covers expenses associated with in vitro fertilization? The employee has her doctor's report showing one full year of "medical infertility" - this seems to be an important criterion for coverage.

4. Group Discussion

He double-clicks the GROUP DISCUSSION icon. Once in GROUP DISCUSSION, he poses the question to his workgroup. Eager to help, Mike then decides to check out the INDUSTRY NEWS database for any background information that might be useful to Ellen.


Lotus Notes
File Edit View Mail Compose Style Options Design Window Help
Response 1 of 1 to "In Vitro Fertilization Coverage?"
Document
Main
Selected
Unread

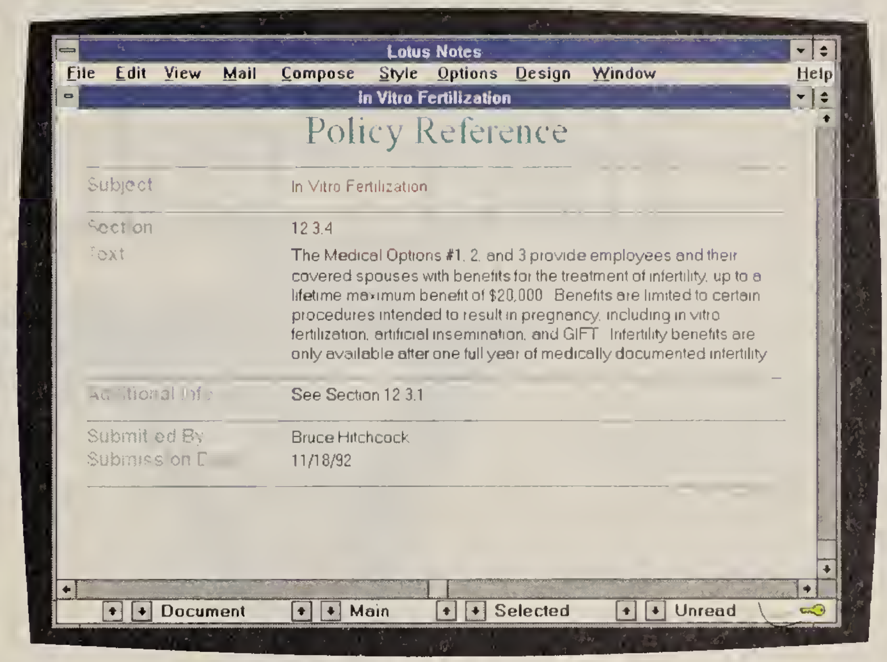
Author: Barry Kepler Date: 01 51 PM Today

Yes, it is now covered

Here is the relevant section of the new policy -->

7. Group Discussion

When he gets back to his desk, Mike checks back into the GROUP DISCUSSION database for responses. Not only has Barry Kepler responded with the answer, Barry actually leads Mike to the relevant section of the corporate policy manual by creating a direct link to the document.


Lotus Notes
File Edit View Mail Compose Style Options Design Window Help
In Vitro Fertilization
Document
Main
Selected
Unread

Policy Reference

Subject: In Vitro Fertilization
Section: 12 3.4
Text: The Medical Options #1, 2, and 3 provide employees and their covered spouses with benefits for the treatment of infertility, up to a lifetime maximum benefit of $20,000. Benefits are limited to certain procedures intended to result in pregnancy, including in vitro fertilization, artificial insemination, and GIFT. Infertility benefits are only available after one full year of medically documented infertility
Additional Info: See Section 12 3.1
Submitted By: Bruce Hitchcock
Submission Date: 11/18/92

8. Policy Reference

Mike clicks the DOC LINK icon. Up comes the relevant section of the policy. Mike jots a quick message and forwards both to Ellen. Job done, in less than 10 minutes, by easily tapping into expertise both inside and outside the company.

e power of Notes, we example of Mike.

Watch how Notes organizes information so it's easy for Mike to get the answers he needs. How effortlessly he taps his workgroup's knowledge. How quickly he accesses conventional references. Now you can see why people who have Notes build their work around it. And why the companies that have installed Notes have seen as much as a 400% return on their investment.*

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Lotus Notes

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Outsourcing can cure health care IS ills

By Nell Margolis

In the multimillion-dollar annals of outsourcing, the $70 million deal recently announced by IBM's Integrated Systems Solutions Corp. (ISSC) and five regions' worth of Oakland, Calif.-based health care giant Kaiser Permanente Health Plan, Inc. is no big whoop. But it could signal the beginning of a health care outsourcing boomlet to come.

A well-documented national health care crisis of gargantuan proportions [CW, Aug. 3, 1992] and a presidential administration committed to taming it are converging to whip health care into "one of the year's biggest growth areas," said Dataquest/Ledgeway Group outsourcing analyst Julie Schwartz.

More important to outsourcers, "it's a boom area that's technologically behind," Schwartz said. Dataquest/Ledgeway projected that health care expenditures on outsourcing will hit roughly $900 million annually by 1996.

"Health care is an industry that badly needs to lose its historical reluctance to outsource IS," said Charles Singer, president of Charles J. Singer & Co., an information systems/health care consultancy in Cambridge, Mass.

Singer noted that the more IS activities can be outsourced, the more IS professionals can focus their time and attention on initiatives that relate directly to providing a higher quality of care to a greater number of people.

That is the kind of priority-setting that spurred Blue Cross/Blue Shield of Massachusetts in Boston to sign on with Electronic Data Systems Corp. in January 1992 for the record-setting price of $800 million.

One year later, Blue Cross views its hefty outlay as money well spent, said Martin C. Joyce Jr., senior vice president of operations.

"We outsourced primarily because we had a model of delivering information that we couldn't live with: costly, not agile, two years away from managed care and about five years away from world class," Joyce said.

So far, he said, the deal is living up to — and at times surpassing — expectations.

Health notes
Key health care outsourcing pacts include the following:

January 1992 — Blue Cross/Blue Shield of Massachusetts outsourced its IS operations to EDS for an estimated $800 million over 10 years.

August 1992 — IBM subsidiary ISSC won an approximately $52 million, five-year outsourcing and development deal with Blue Cross/Blue Shield of New Jersey.

January 1993 — ISSC, in a joint venture with Policy Management Systems, landed the Kaiser Permanente deal.

Moreover, the deal may be about to expand. Last fall, Blue Cross finalized a merger with Bay State Healthcare, a 150,000-subscriber health maintenance organization.

A task force is studying the pros and cons of bringing Bay State's systems into the EDS fold and will present its conclusions in April. The task force's nod could be worth $4 million to $6 million to EDS, Joyce said.

Outsourcing optimism

At Blue Cross/Blue Shield of New Jersey, IS director Al Sturzione had a similarly upbeat assessment of his organization's 6-month-old outsourcing contract with ISSC and its technology ally, Policy Management Systems Corp.

New Jersey Blue Cross outsourced to give its constituent doctors and patients the benefit of electronic sophistication well beyond in-house resources.

Of course, outsourcing is not a panacea, even for heath care organizations.

"If you have reasonably current technology, a lean, efficient IS shop and an open, flexible architecture, then you probably shouldn't outsource," Joyce noted.

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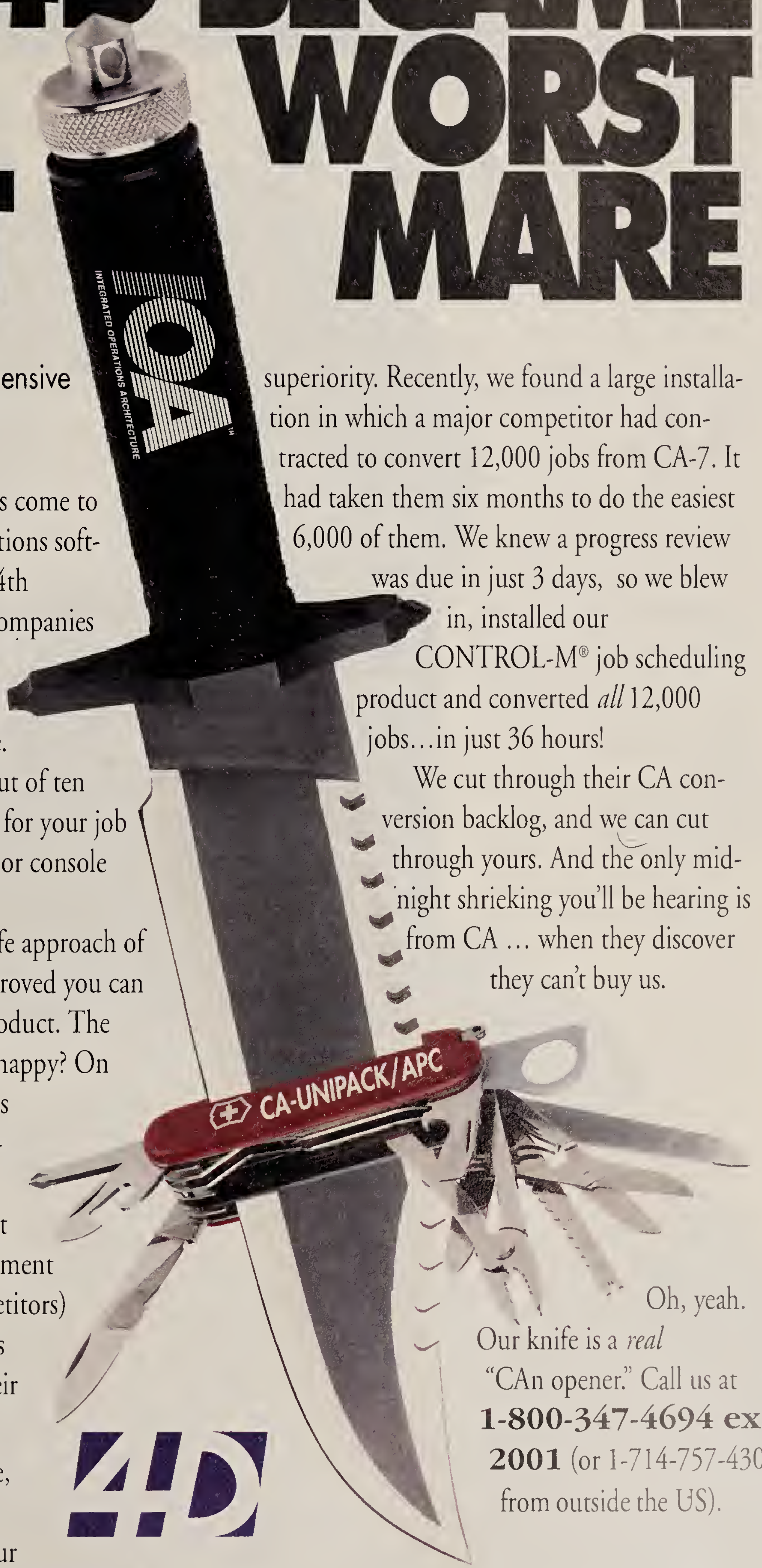

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> GARTNER GROUP

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We cut through their CA conversion backlog, and we can cut through yours. And the only midnight shrieking you'll be hearing is from CA ... when they discover they can't buy us.

Oh, yeah. Our knife is a *real* “CAn opener.” Call us at **1-800-347-4694 ext. 2001** (or 1-714-757-4300 from outside the US).

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TRBA

James Unruh

Face to Face

Unisys' president and CEO speaks out about the merger that created his company

Q. Was the merger of Burroughs and Sperry a good idea, all things considered?

A. There's a tendency to blame the financial difficulties we had [on the merger]. I don't believe that is cause and effect. If there was any negative to the merger, it is that we couldn't have been preoccupied with it at a worse time. It was almost coincident with that period in this business when things really started to change in a fundamental way. We lost some time recognizing these changes because we were so focused on the merger. But over the long term, we will reap many benefits from it. You just can't answer that question with a clear yes or no.

Q. How difficult was the turnaround process?

A. Getting the ship to turn around was a lot harder and slower than I thought it would be. We did have a genuine loyalty factor with our customers. I sensed they wanted us to succeed almost more than we did. But we also had a situation where the customers couldn't exercise a total change instantaneously simply because they had no option. There was a certain amount of patience they had to have. That gave us a chance to demonstrate it was all going to turn around. What we told them would happen did happen.

Q. Why have so many smart companies run by smart people screwed up so badly?

A. A former associate of mine studies business history as an avocation. His conclusion is, "Those who should, don't." We all have a huge investment in the status quo and in our own paradigm of what we think the world looks like. American businessmen in general are guilty of this. Take the auto industry. How long did they try to deny small cars? We seem to have to face a crisis in order to step back and fundamentally reassess our businesses.

Q. How are you positioning Unisys?

A. One part of our business is the traditional mainframe. But that is not the growth of our new business. Its value is that it is a very important contributor to our financial performance. But it is also important to the customer relationships and the foundation one can build upon for expanding our role with those customers. I am not ashamed of our mainframe business. Unfortunately, too many people still think of us mostly as a mainframe company.

Paramax [Unisys' defense entity] is a complex systems and software development organization. They do not build weapons. The core of that business is not growing. We are focusing the attention of that organization on the civilian parts of government, like air traffic control and weather systems.

The core of our business is software and services, workstations and servers. That's going to have to grow on a secular basis if we are to succeed. The other two are good businesses, but they are not growth businesses.

Q. Is Unisys going to grow?

A. You'll never hear me focus on growth for the sake of growth. I'm only interested in profitable growth. We can't succeed unless we start to grow again. [Growth] is a reflection of whether we are participating in where the business direction is at.

Q. Overall, industry growth has slowed.

A. A big reason for the slowdown in the revenue growth in our industry is that we took care of all the easy automation jobs. The CEOs are now saying, "Hey, wait a minute. Where's the return?" We have to focus today on that part of our customers' business that they haven't previously attacked where they can apply technology and get a return on it. We've got to do things differently than we used to. We used to go out and sell boxes. No more. You win a customer today because he sees some solution to a problem. And the solution rarely will be a box. It may have a box contained in it.

James Unruh: 'If there was any negative to the merger, it is that we couldn't have been preoccupied with it at a worse time'

Q. But traditional proprietary vendors have not typically provided integration services.

A. There are some perception issues. Can we be objective? That's a customer concern. Are we going to always try to shoehorn Unisys equipment into the system regardless of what the problem is? That's less of an issue if we have a true open systems commitment.

Q. How much more difficult is the IS manager's job today?

A. Probably at least a couple of orders of magnitude more complex because the technology is far more complex. It is beyond their ability to stay on top of it. The open systems direction complicates their lives greatly. There's a dark side to the open systems world.

Q. Do customers accept the realities of open systems, like no "free" or bundled support?

A. The reality sinks in more as each day passes. But a lot of people still think they can compare the price of the box in open systems against the price of a proprietary box. The thing that is still not fully accepted is that open systems does not mean that all things work automatically when you plug them in. It's not to the point of your stereo system. I see organizations where there is someone who is shopping for the lowest price in catalogs and they are not well-equipped to understand all the intricacies of the technology; they don't understand why it doesn't work.

Q. When you took the CEO job two years ago, a colleague offered to buy your golf clubs. . . .

A. Well, my handicap has doubled since I took this job. But when I do play, it's important to me to advertise the company. So I try to spray as many Unisys balls around the course as I can.

Q. You've had success turning Unisys around. What if IBM calls and asks you to do the same there?

A. I'd say I'm enjoying Blue Bell [Pa.]. It's a very nice area.

Q. What if they say, "Jim, name your price?"

A. That's too hypothetical.

Q. You never think about this possibility?

A. I think about the challenge IBM has. I don't think in terms of waiting for a phone call. Not at all.

Interview by Bill Laberis, *Computerworld*'s editor in chief.

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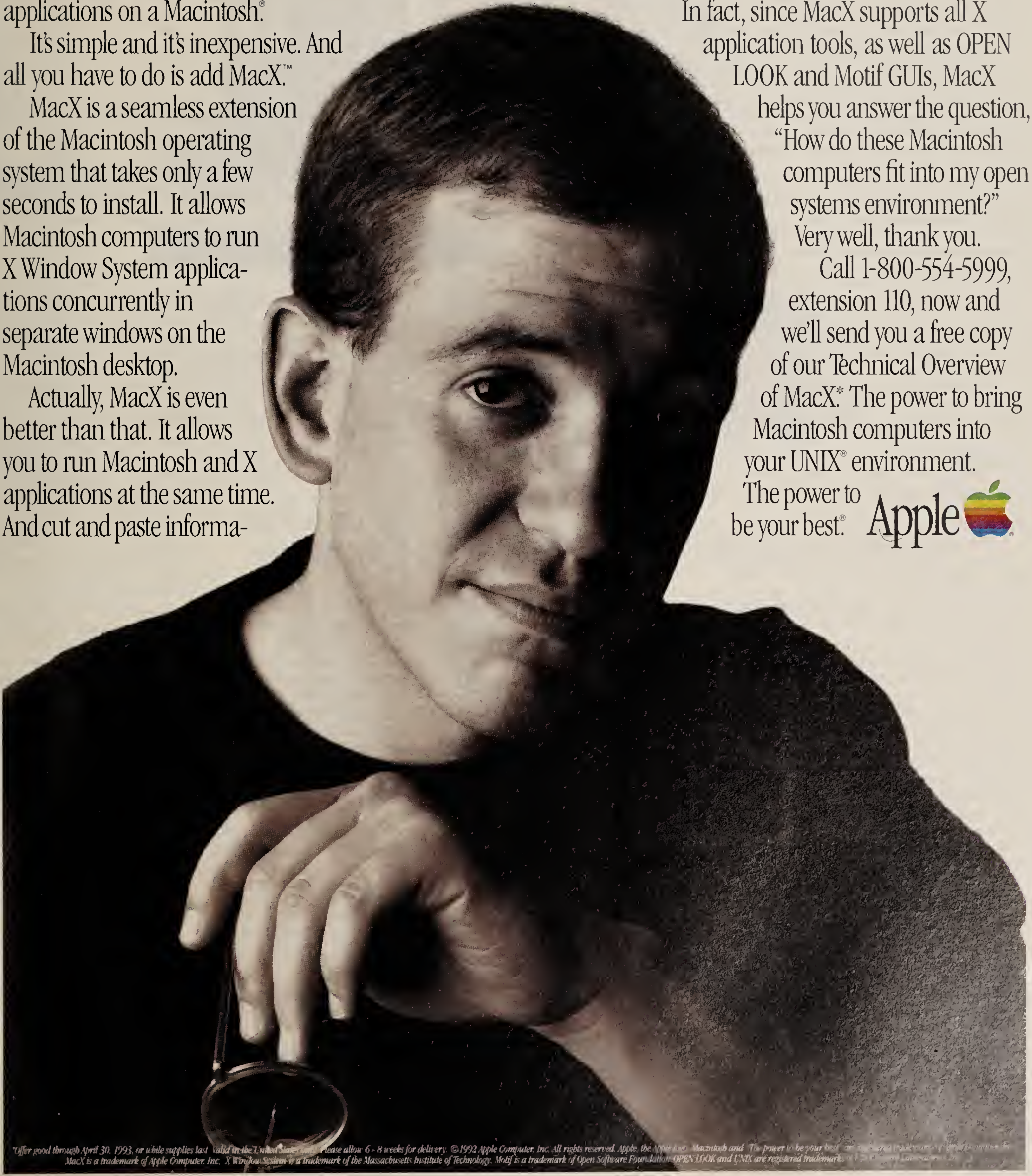

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Editorial

Misplaced trust

I grew up in Poughkeepsie, N.Y. In many ways, it is the prototypical, small American city: miles of middle-class suburbs sprawled comfortably among grassy hills that roll down to the Hudson River.

At the intersection of South Road and Route 9 in Poughkeepsie stands an imposing stone edifice: the clock tower of IBM's South Road plant. Since I was a kid, it's stood like a sphinx—solid, stoic and always there.

Many of the kids I went to high school with were "IBM brats." Their families weren't rich, but they resided in comfortable homes with two cars and a power lawnmower in the garage. Their parents had birthday parties for them and hosted backyard barbecues when we graduated. They lived the American dream: As employees of the grandest American company in the proudest of American industries, they had deposited their retirement funds in the safest of American investments—IBM stock.

The fathers (they were mostly fathers) worked on products I hadn't heard of and cared little about—things like MVS and VSE and thermal conduction modules. They railed against the Japanese and talked tough about the competition. In 1975, the future was so bright they had to wear shades.

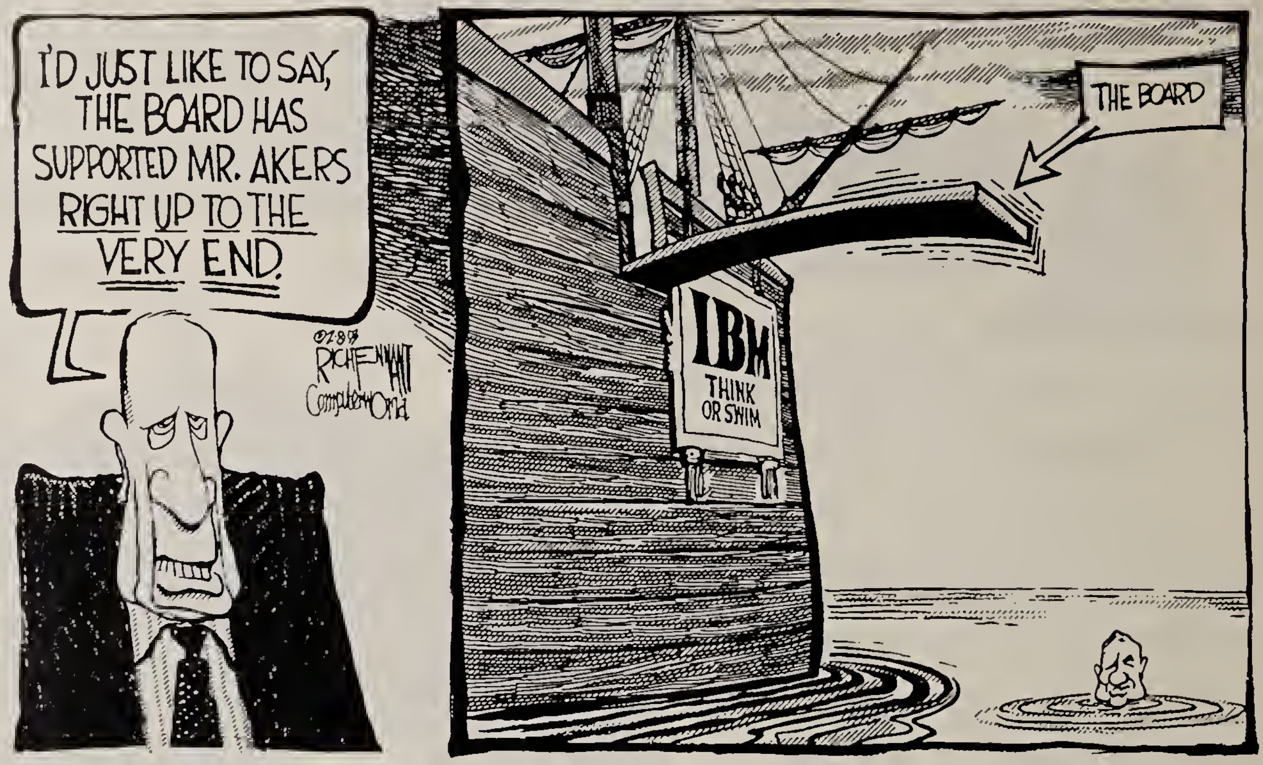
Well, the future is here. The Japanese didn't do that much damage after all, but MVS operating systems and Escon channels didn't amount to a hill of beans against 486s, Ethernet and Windows—stuff my friends' dads had never even heard of. The world's greatest company got caught flat-footed by a band of bright, young software nerds from Washington and RISC engineers from Sunnyvale. The stock my friends' dads invested their retirement money in is off 70% from its all-time high. Some cynics say IBM won't survive.

The fathers at those backyard barbecues didn't care much about RISC vs. CISC or who took who to the cleaners when PC software licenses were negotiated. They were proud of their work and fiercely loyal to IBM. They expected to be rewarded with a decent salary, a comfortable retirement and job security. I'm not sure what they'll get now.

In the coming months, we will read a lot about how IBM gave away its leadership in the computer industry. There'll be stories about high-level buffoonery, political gamesmanship and calcified management. We'll hear many people say, "Told you so."

I don't excuse IBM for the mistakes it made. But I do respect it for being the kind of institution that inspired blind loyalty from its employees. We may never again see that kind of shared commitment between an American company and the people who work for it. The loss of that trust because of the myopia of a few misguided executives is the real tragedy of this whole episode.

Paul Gillin, *Executive editor*


I'D JUST LIKE TO SAY, THE BOARD HAS SUPPORTED MR. AKERS RIGHT UP TO THE VERY END.
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THE BOARD
IBM
THINK OR SWIM

Letters to the editor

Overdue

Your editorial on Unisys [CW, Jan. 25] and its recent and continuing recovery was the first bit of in-depth and fair coverage I have seen on Unisys by *Computerworld* in quite a few years. I want to thank you for confirming what our Japanese counterparts have known for quite some time.

Users of Unisys equipment have been seen as renegades in our industry during the years. I can only imagine this was because of the enormous number of IBM employees who could not imagine using anything other than the "safe" IBM solution, regardless of cost to their organization.

The Japanese, as well as many U.S. companies, have found Unisys solutions to be effective, reliable and affordable. We also have bought into the broadest code-compatible platform that the industry offers.

Jack W. Reid
Lexington, Ky.

Lighten up

I read with horror Scott Shinberg's letter to the editor [CW, Jan. 18] regarding Michael Cohn's Viewpoint article "The 'Ize' have it" [CW, Dec 21, 1992].

When I receive my *Computerworld*, one of the first things I look for is the Viewpoint page to see if there's an article by Mr. Cohn. As a computer professional, I can't believe there are any *Computerworld* readers who took his advice seriously; we're much too adult for that. We simply enjoy poking fun at ourselves and our industry.

A little levity goes a long way to lighten the load that we all carry and to boost morale. So, Scott, lighten up or you'll stress yourself into an early grave — or at the least, an ulcer!

Emily Rambo
Jacksonville, Fla.

Nothing wrong with monopoly

John Chisholm provided me with a moment of respite with his op-ed article "Stop whining and leave Microsoft alone" [CW, Jan. 18]. Survival of American businesses depends on someone's defense of business as moral.

"Microsoft bashing" is part of the more generic attack by uninformed people on business in general. Achieving a monopoly in a competitive environment is good: good for the monopolist and good for users.

After all, no one forces you to buy goods from a particular supplier (unless it is the government in its role as postal service provider, for example).

The author scored a bull's-eye.

F. William Ballou
Williamsburg, Va.

Different sense of humor

I just read the Jan. 11 issue of *Computerworld*, and I am truly sorry I did.

Your "Humor" piece on OS/2, "Easy as 1-OS/2-3," was the most biased, ignorant, uninformed attack on OS/2 I've seen. I'm accustomed to some publications — notably those whose ad revenue is dominated by Microsoft — doing "hit pieces" on OS/2, but I never expected it from *Computerworld*.

OS/2 takes a large step forward from the legacy of DOS and Windows and yet still maintains compatibility with the past. DOS and Windows applications run on OS/2 without trouble.

I use a broad selection of DOS, Windows and, yes, even OS/2 apps on OS/2 2.0. It has been more stable and trouble-free than DOS or Windows could ever hope to be.

What I don't understand is why you would spread Microsoft's lies and disinformation. What's in it for *Computerworld*? Do you receive a large part of your ad revenue from Microsoft? It doesn't appear so from the page count. Or are your columnists so lazy and ignorant that they pick up their themes from other articles?

Computerworld has just distinguished itself as having the same journalistic integrity and independence as *The Star*. I've had a lot of experience with OS/2 and was able to see for myself how slanted your reporting is.

Humor? Who thought this piece was funny?

Joe Barnhart
Santa Rosa, Calif.

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DEC must pick an operating system identity

Michael Vizard

The good news for DEC is that it is beginning to inch its way back to profitability following the shipping of its Alpha AXP RISC systems. But while the arrival of these systems will satisfy the pent-up demand for additional horsepower at VAX/VMS sites, there is another issue facing DEC and its customers: the possible impact of Microsoft's Windows NT on DEC's installed base during the next few years.

Today, DEC presents IS directors with a classic picture of a patient with multiple personalities as it bills three major operating systems for Alpha AXP systems — OpenVMS, DEC's OSF/1 and NT — as relative equals.

DEC's core constituency is looking for the company to articulate a more focused direction. They want DEC to provide some leadership by helping them plan for a decade that will be dominated by desktop systems linked together by client/server applications.

Adapting to the new requirements of its customers won't be easy for DEC because its OpenVMS operating system has been brutally — and perhap unjustifiably — tarnished in the open systems wars with Unix vendors. After all, none of the more than 25 flavors of Unix available today is a particularly open system.

And today, with the belated arrival of Alpha, OpenVMS is now one of the fastest, least expensive 32-bit preemptive multitasking operating systems available. In fact, when you take into account the journaling and recovery features of OpenVMS with a RISC processor, DEC has put in place one of the best client/server development platforms available today.

Of course, the tragedy of OpenVMS on Alpha AXP systems is that while VMS diehards are excited by it, the dominant operating system in the market today is Windows/DOS, which will be shortly supplemented by NT.

At DEC sites, NT has the potential to become a juggernaut because it provides a preemptive multitasking operating system that supports the ubiquitous Windows interface.

Already, users and application developers within the Digital Equipment Computer User Society are speculating about what it will take to make the transition from OpenVMS to NT.

It may be the fourth quarter before Microsoft irons out the support issues for NT. But for DEC, getting staunchly behind NT today as the company's primary strategic focus is critical to the company's survival in the 1990s.

OpenVMS and DEC OSF/1 might be two of the most technically elegant operating systems ever developed, but the reality facing DEC is that it needs a strong desktop partner like Microsoft to fend off IBM and Apple on one front, while also competing with Novell's Unix foray.

DEC must demonstrate how its knowledge of 32-bit operating systems and RISC system development can add a significant value to the NT development effort. Otherwise, the company is in danger of becoming one more reformed purveyor of midrange systems chasing after a market that will be dominated by an army of Intel clones running NT.

And if that comes to pass, DEC's restructuring efforts, which have already claimed an estimated 10,000 jobs, will only be a small taste of the downsizing agony to come.

Vizard is *Computerworld*'s senior editor, personal computing.

Metrics: The art of the well-supported lie

COUNTER-INFORMATION *by* Michael Schrage

No doubt you've heard the saying that figures don't lie, but liars figure. When it comes to software productivity, that epigram should be: Metrics don't lie, but liars metric.

No single issue in computerdom has burned out more good neurons in more bright minds than how best to measure programmer/software productivity. The cult and culture of software metrics remain relentlessly powerful and persuasive. Even the best-managed organizations have cracklike cravings to lash their developers to productivity metrics. Virtually any quant nerd with even a glimmer of a metric can get a serious hearing.

The dirty little open secret that barely a handful of metrics yield benefits that — ahem! — measurably outweigh their costs doesn't much seem to matter.

Of course, it's always cheap and easy to knock software metrics. There's a terrific scene in the new Bill Gates bio where the budding boy billionaire witheringly dismisses IBM's "K-LOCs" (thousands of lines of code) productivity metric as a "masses of asses" approach to software programming. Gates just can't understand why IBM's top management thinks there's any kind of correlation between quantity of code and quality. Indeed, one of the book's implicit messages is that IBM's metrics theology consistently undermined its efforts to compete effectively in the PC marketplace.

Part of the problem is that software is as much a medium as a tool, and we've never come to grips with measuring the productivity of media.

Consider paper, which is simultaneously a business medium and a tool. We can design paper forms that make it easier for the clerks to be more productive, but these also manage to waste everybody else's time. (Does the phrase "expense report" ring a bell?) So where's the productivity gain?

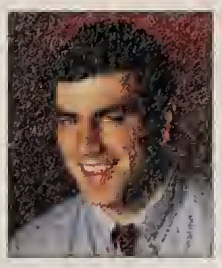
The paper paradox highlights the difficulty in creating meaningful software productivity metrics: It's easy to purchase programmer productivity at the expense of the rest of the organization.

Some companies have simply decided to junk traditional productivity metrics. American Airlines reportedly won't fund any software projects that can't demonstrate at least a 10-to-1 *financial* return on investment. So much for K-LOCs and function point analysis.

Similarly, it's far from clear what metrics object-oriented languages and reusable code will inspire. If it takes you a little longer to figure out how to reuse existing code effectively, does that mean you've become more productive over time? Or less? The answer — "it depends" — is why metrics will always be a hot button.

Indeed, these issues are so hot that I'm surprised *Computerworld* doesn't feature a "metric of the month" and run reader call-in surveys to determine the programmer's best-loved/most-hated productivity metrics. I'm sure several companies are already busy turning out benchmarks or "meta-metrics."

It's true that Lord Kelvin (of thermometer fame) once remarked that we can't really speak intelligently about something unless we can measure it in some way. It's also true that the eminent philosopher, Lord Whitehead, once commented that we should seek simplicity — and distrust it.



Let's be honest and settle for the unhappy medium. We should seek software metrics — and distrust them.

Schrage consults and writes about how technology reshapes the way people interact. He is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science and author of a book on collaborative technologies, *Shared Minds* (Random House, 1990).

Commentary

Charles Babcock

Brave new world

The resignation of IBM's John Akers is being greeted as the epitaph for the mainframe era, which opens the way for the coronation of desktop computing. This view underestimates the forces that eroded IBM's position. User-driven winds of change propelled companies such as Microsoft, Novell and Intel toward the top, but those same forces could eventually displace these companies as well, without granting them the benefit of IBM's 29-year reign.

These days, leading-edge technology is no guarantee of anything. User organizations scrutinize technology for its competitive advantage, and once they find it, they deploy rapidly. Technology as a competitive factor has become democratized, with formerly computer-illiterate workers far down in the ranks eagerly seizing new automated tools.

The pattern is strongly PC-based — Intel's Andrew Grove estimates 40 million PCs were sold in 1992 alone. But the change is more than just a PC phenomenon. The initial strength of relational database systems was on minicomputers. In the midst of drastically slowing sales in that market, Oracle is selling $1.2 billion worth of software a year, with the growth coming from Unix workstations and servers as well as PCs.

The late Thomas Watson Sr. believed that if you dressed up a salesman and sat him down in a customer vice president's office, you could sell IBM computers. And for his era, he was right. Today, the expanding base of users makes it impossible for any one firm to predict what they will need next or even who those users are likely to be.

In the business press, there are frequent references to the winners and losers of this new era, with those who follow "open" standards getting the most accolades. But even here, user-driven change threatens the ground beneath the newly anointed. We live, not in an age of standards set by ANSI committees, but in one of de facto standards set by the marketplace. Driven by the democratization of technology, innovations that make information more useful win early acceptance. Users watch and wait, with little regard for originators or brand loyalty, to see who puts an innovation into the best price/performance package.

The quality innovator must somehow end up as the low-cost producer, a characteristic that used to form the dividing line between companies in the industry. Compaq was a quality innovator, but its survival was undermined until it also became a low-cost supplier. None of today's PC hardware or software companies can claim a sure grasp on this process, with the exception of Intel.

There is still another user-driven force loose on the landscape. Any emerging standard must remain open enough to potential competitors to attract outside brain power and capital. If a product does not attract widespread investment, users reserve the right to turn to some competing technology that promises to move forward more quickly.

This force phenomenon is baffling to old-line companies such as DEC and IBM because they have learned to expect some return on R&D. But since the PC revolution, users understand the difference between multiple parties driving a technology forward and proprietary technology. Their needs are too varied and too great for any one firm to satisfy anyway, so they avoid a technology that is controlled by a vendor's self-interest.

In this brave new world, the ultimate user test of a successful technology company is timing. Are its innovations in step with what the user community wants? Has it put the right resources into developing a useful package? And does it have the guts to snatch profits out from under an aging technology and plow them into an innovation that will vie to become a standard?

Babcock is *Computerworld*'s technical editor.

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Apple readies slew of low-cost computers

High-end Quadra and first color PowerBook systems are expected at Macworld Japan this week

By James Daly
TOKYO

Apple Computer, Inc. will unveil a half-dozen aggressively priced Macintosh computers this week at Macworld Japan in what looks like the next chapter of the PC price wars, sources close to the company said.

The introductions will refresh and add depth to a broad portion of the Macintosh line. They range from a new high-end Macintosh and some speedy midline additions to long-awaited color versions of Apple's Classic and Portable machines.

The best news for information systems managers is that Apple is continuing to abandon its strategy of pricing its computers at a premium comparable to IBM PC clones. "For a long time, Apple has used the ease-of-use argument to lure people away from buying Windows, but that just doesn't work anymore," said Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in Santa Clara, Calif. "These days, everyone is looking at price."

Apple is expected to face additional pricing pressure later this year from a new crop of low-cost IBM-compatible machines that are due to follow in the wake of Intel Corp.'s introduction of a new version of its I486 chip.

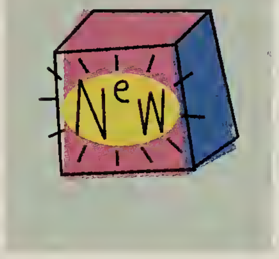
On the high end, Apple will unveil a new version of its sophisticated Quadra computer, the Quadra 800, that is expected to target complex networking and high-powered graphical applications. The floor-standing Quadra 800 will be built around Motorola, Inc.'s speedy 33-MHz 68040 microprocessor and is expected to cost about $3,500, sources said. It will also offer built-in color and monitor support and 8M bytes of random-access memory.

The Quadra 800 introduction is another piece in Apple's plan to get its customers moving along the path to a client/server environment. The strategy is expected to come to fruition by midyear, with the expected shipment of the first true dedicated Macintosh server.

Although the Quadra computer certainly has the power to work as a server, Apple never positioned it as such and hence added on a lot of the gadgets and functionality expected in a more general-purpose machine.

Keep 'em coming

This week's rollouts continue Apple's rapid-fire product introduction strategy: The company unveiled three computers in September, six systems in October and three printers and a scanner last month at Macworld in San Francisco.



Also on tap this week will be the debut of a midrange product line called Macintosh Centris. The $2,000 Centris 610 will use the 20-MHz 68040, while the $3,000 Centris 650 will use a 25-MHz chip. Both will provide Nubus and built-in monitor support and offer 4M bytes of memory expandable to 64M bytes.

The Centris 610 is designed to replace the older Macintosh IISI, which employs a less powerful Motorola 68030 chip. Comparable IBM clones are priced in the $2,500 to $4,000 range.

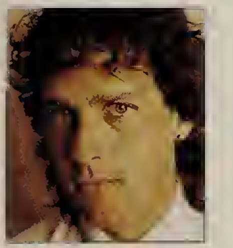
Fans of color computing will get Apple's first color notebook computer, the PowerBook 165C. The model is a color version of the PowerBook 165, with a passive-matrix 640-by-400 color LCD and a 33-MHz 68030 processor. It is expected to cost about $4,000. A color version of the PowerBook 185 is slated for this year and expected to sell for less than $5,000, sources said.

Apple is also expected to introduce a color version of the Macintosh Classic that will sell for around $1,250. The company will also replace the color Macintosh LC II with the LC III, which will sport the faster 25-MHz 68030 chip.

Commentary

James Daly

Get thee some security



One ringy dingy . . . In tight economic times, probably the last thing you want to hear is someone you've never met and don't know (me) telling you new ways to spend your money. But here's an outlay worth considering.

With the growing number of telephone hackers, businesses that want to protect themselves from those bent on stealing access to their phone lines might investigate the handful of insurance companies now providing coverage against toll fraud.

Why? Now that many users own the equipment penetrated by the thieves, long-distance carriers assert that liability for such losses rests exclusively with the user or owner. In other words, if unauthorized calls are discovered on your phone bill — whether for $100 or $100,000 — you will be the one who ultimately pays. Not AT&T. Not Sprint. Not MCI.

Most of the policies extend coverage to $1 million worth of long-distance calls — about equal to the largest single loss to date. We know of at

Daly, *page 32*

VDT vision problems may affect 10 million

By Mitch Betts
BERKELEY, CALIF.

Computer vision syndrome. It sounds like a topic for the next edition of the Oprah Winfrey show, but a study recently published in the *Journal of the American Optometric Association* indicates it is a serious problem for nearly 10 million Americans.

The study by James E. Sheedy, chief of the VDT Eye Clinic at the University of California at Berkeley, surveyed 1,307 optometrists nationwide and found that 14% of their patients had symptoms such as eye strain, headaches and blurred vision from the use of VDTs.

When that figure is projected to the whole U.S. population, it suggests that there are nearly 10 million people per year who get an eye checkup primarily because of vision problems related to computer use, the study said. The biggest culprits are screen glare and improper lighting.

The survey found that the vast majority of optometrists recommend changes in the VDT work environment, including use of anti-glare filters. About 40% of the patients need eyeglasses designed specifically for VDT work.

Tips for reducing computer vision syndrome:

- Position the center of the screen about 20 degrees below eye level; viewing distance should be 18 to 30 inches.
- Use a high-resolution monitor.
- Position the VDT so that the office window is at a right angle to the screen. If that is not possible, close the window blinds.
- Reduce overhead lighting to cut glare. If glare persists, use a high-quality antiglare filter.
- Clean the screen and/or filter to remove dust and fingerprints.
- Use an adjustable document holder that puts reference material at the same height and plane as the computer screen.
- Rest your eyes occasionally.
- Get regular eye checkups; mention VDT work.

Sources: Center for Office Technology; Library of Congress; Optical Coating Laboratory.

The prevalence of "computer vision syndrome" has triggered a flurry of products claiming to alleviate the problem, from stick-on screen films and specially coated eyeglasses to software that leads the user in eye exercises.

Sometimes the claims go too far, according to regulators. The Federal Trade Commission (FTC) recently charged a firm called Site for Sore Eyes, Inc. with making unsubstantiated claims that its "UV400" coating for eyeglasses would protect consumers from "harmful" ultraviolet (UV) rays emitted by computer terminals.

The Hayward, Calif., company and the FTC have settled the charges in a consent agreement that prevents the company from making such claims without scientific backup.

Sheedy said UV-absorbing eyeglasses might be useful for outdoor work, but they are unnecessary for VDT work because there are "almost zero" UV emissions from VDTs. Eyeglasses with antireflective coatings are mildly helpful for VDT users but should not be sold as cure-alls, he added.

The most common product in this field, an antiglare filter that fits over a computer screen, is available from vendors such as Polaroid Corp. in Norwood, Mass., SunFlex Co. in Novato, Calif., and Optical Coating Laboratory, Inc. in Santa Rosa, Calif.

The American Optometric Association in St. Louis recently awarded Optical Coating Laboratory's Glare/Guard filter with its seal of acceptance for meeting the association's guidelines for glare reduction. Sheedy said he expects that other vendors will be able to meet the guidelines, too.

Daly

CONTINUED FROM PAGE 31

least four companies that offer such insurance: The Travelers Corp. in Hartford, Conn.; Chubb Corp. in Warren, N.J.; National Union Fire Insurance Co. in Pittsburgh; and Aetna Life and Casualty Co. in Hartford, Conn., which limits its policy writing to financial institutions.

Coverage can be expensive — up to $50,000 for the million-dollar policies. But consider the alternative: U.S. businesses are expected to pay more than $4 billion for unauthorized long-distance calls this year, according to Telecommunications Advisors, Inc., a Portland, Ore.-based consultancy.

And mull over these words from Don Delaney, a senior investigator with the New York State Police, who said that last year he received 150 complaints of toll fraud, with losses ranging from $40,000 to $500,000: "It's not a matter of *if* people will be hit, but *when*."

No charge for crashing your system . . .
There's a handy, if controversial, little program out there called "Virus Simulator" that simulates hundreds of viruses, including file-infectors, boot sector viruses and memory-resident viruses. It enables users to check out a scanner or their company's antiviral procedure without playing with live ammo. For copies, send $25 to inventor Doren Rosenthal at Rosenthal Engineering, P.O. Box 1650, San Luis Obispo, Calif., 93406.

A better endorsement can't be found . . .
The latest group to get turned on to RSA Data Security, Inc.'s public key data encryption method is hackers. RSA's brand of cryptography is now being used to scramble messages on dial-up bulletin boards by hackers who fear the boards are monitored by law enforcement personnel.

Hack attack . . .
An investigation conducted by the FBI and experts at the University of California at Davis has uncovered computer hackers who have breached the systems of the CIA, the Department of Defense and the National Security Agency, school officials said.

Hackers were apparently able to hack into the university system and then hook into networked lines in government agencies, according to John Crowell, the manager of workstation support at UC-Davis. Crowell said no sensitive data was accessed, but at the height of the penetration, as many as 100 computer users from as far away as Japan and Czechoslovakia were using decoded UC-Davis passwords to illegally enter the government systems.

"We left enough of a security hole so that we could see what they were doing," Crowell added. "We wanted to see if they were malicious, and if they were malevolent we would have cut them off immediately." Although one perpetrator was tracked down, he was a minor and hence will probably be let off with some mild wrist-slapping. The FBI is still investigating the case.

Security on the fly . . .
Scratching your head over a puzzling security problem? You might want to get in touch with Protection Experts, a call-in service that provides immediate (and, they claim, unbiased) answers about computer security policies and practices, electronic eavesdropping and countermeasures, malicious software, network protection and the like.

The service is run by Fred Cohen and Charles Preston, two noted security experts, who will give you answers based on an extensive library of security literature and their years of knowledge. Calls are $20 for the first 10 minutes and $3 per minute thereafter. Visa and Mastercard are accepted. Cohen is in Pittsburgh and his number is (412) 422-4134; hours are 8:30 a.m. to 2 p.m. EST, Monday through Friday. Preston is way up in the frosty confines of Anchorage, Alaska, and can be reached at (907) 344-5164 from 2 p.m. to 7:30 p.m. EST, Monday through Friday. Fax requests are processed for $20 each but must be sent on their official "Fax Information Service Request Form." Call them for a copy.

Daly is a *Computerworld* West Coast senior correspondent.

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Applications

Tool makes drawing easy

By Christopher Lindquist

Anyone who has ever tried to draw a floor plan, network diagram or flowchart, either by hand or with a traditional drawing package, knows the meaning of the word tedious.

Several companies, including Softsync, Inc. with its Expert line, have tried to address the situation by creating project-specific software for creating such drawings. Now the Seattle-based firm Shapeware Corp. has released Visio, a Microsoft Corp. Windows-based product that falls somewhere between a general-purpose drawing package and one that is task-specific.

Visio comes with a large assortment of "SmartShapes" that can be used in floor plans, organizational charts, flowcharts or just about any other drawing. These shapes are organized into "stencils," or sheets that are arranged according to function.

To use Visio, the user calls up the appropriate stencil and drags the needed shapes onto a representation of a sheet of paper. SmartShapes can be rotated, resized and snapped to alignment. They can also be customized or created using "ShapeSheets" that contain both the shape's image and information about its behavior, including what happens when it is resized and where its connecting points are.

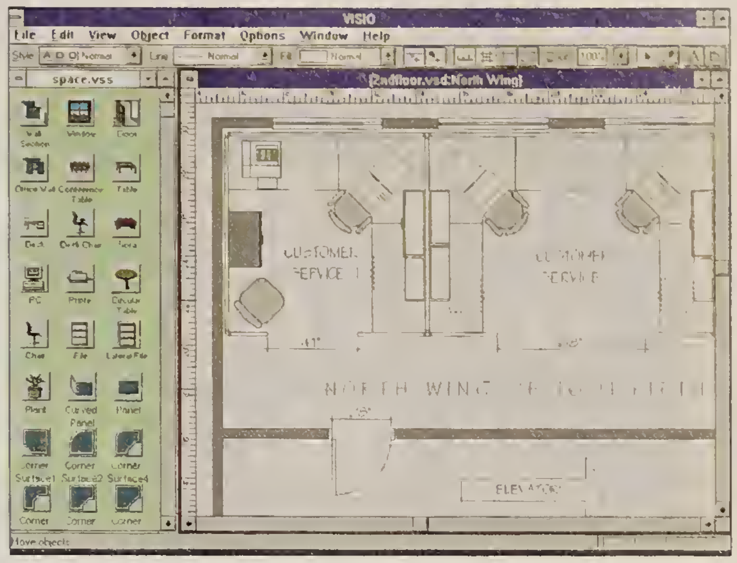
Visio is certainly easy to use. I put together a quick representation of my office network in about 15 minutes, and it certainly looks better than anything I could have done with a pencil and ruler.

Like all software, however, Visio is not perfect. But my problems with it were fairly minor, particularly for a first version of a product.

While Visio's shapes are "smarter" than the average collection of lines on a screen, they still have a few things to learn. If two SmartShapes are connected by a line, the line will stretch and move as you reposition the shapes. However, the line is not smart enough to be aware that it is running through another shape or even through one of the shapes to which it is connected. It would be preferable if the lines were designed to avoid running through shapes.

Secondly, Visio's text handling leaves something to be desired. Text that is applied to lines appears superimposed on the line, making it hard to read. And when placed underneath shapes, text that is more than one line long can also bleed into the connecting lines. The text can be moved independently of its attached shape or line, but the process is a bit cumbersome. It would be a big plus if Shapeware would make the lines and shapes smart enough to leave space for text.

Despite these small quibbles, Visio is a worthwhile, well thought out product for people who find themselves having to draw diagrams of nearly any type on a fairly regular basis. At $249 list, it may be a bit pricey for someone who is going to use it only a few times a year. But for anyone who finds himself reaching for a template and ruler or drawing package regularly, Visio will give more time to deal with reality itself rather than making pictures of it.



The Visio drawing package's *'Smartshapes' can be used in floor plans, flow charts or other drawings*

Visio

- A PC-based drawing package produced by Shapeware Corp. in Seattle.
- Requires Microsoft Windows 3.1, an Intel Corp. 386SX-based system or higher and 4M bytes of memory.

Spreadsheets gain shared data through OS/2 server

By Michael Vizard
SANTA CLARA, CALIF.

Arbor Software Corp. has improved the performance and extended the reach of its ESSbase application server for spreadsheets.

Using an OS/2 system as a server, ESSbase provides a shared data resource that is used to populate either Lotus Development Corp. 1-2-3 or Microsoft Corp. Excel spreadsheets running on Microsoft Windows clients.

Arbor improvements to ESSbase performance have resulted in a 150% increase in calculation and consolidation speed. An application programming interface (API) and planned support for SQL will give ESSbase the ability to access data stored in other applications or databases.

"We use ESSbase to do organizational roll-ups of spreadsheets," said David Lammlein, manager of the business support group at the oil and gas subsidiary of Pennzoil Corp. in Houston. By rolling up data from one set of spreadsheets into a single spreadsheet, Pennzoil can create a master spreadsheet that can be sent off to corporate headquarters or distribute a single set of data to multiple spreadsheets across the network, Lammlein said.

Other users include Microsoft, which late last month announced that it will use ESSbase as part of its Budget Workbench, an internal budgeting system.

ESSbase is based on a proprietary database architecture that arranges data in arrays instead of in the traditional table format found in a relational database. These arrays can then be accessed by spreadsheet users over the network to arrange that data in any dimension they like within their spreadsheet.

This capability is similar to the next-generation multidimensional spreadsheets under development at Lotus and Computer Associates International, Inc. However, while these spreadsheets provide multidimensional viewing capabilities, they require users to adopt a new spreadsheet format that is not linked to a sharable data resource on a network server.

The latest enhancements to ESSbase include major improvements to the retrieval and calculation speed of the database, an API to link ESSbase with a wider variety of applications, a format conversion mechanism for loading data from other systems into ESSbase and support for the SQL interface and the Open Database Connectivity (ODBC) interface from Microsoft. Support for SQL and ODBC is scheduled for the third quarter.

"With SQL support, we can now access data from relational databases and then use that data to populate cells in spreadsheets," said James Dorrian, president and co-founder of Arbor Software.

Later this year, Arbor intends to add support for Apple Computer, Inc. Macintosh clients and Unix and Windows NT servers. Network operating systems currently supported include Novell, Inc.'s NetWare, Microsoft's LAN Manager, Banyan Systems, Inc.'s Vines, Digital Equipment Corp.'s Pathworks and IBM's LAN Server.

Pricing for ESSbase starts at about $25,000.

New Products

Software application packages

Smart Software, Inc. has introduced SmartForecasts Version 3, business forecasting software for PCs.

The product has an automatic forecasting expert system that can forecast elements including product demands, budget line costs, sales and revenue. Increased data capacity, faster processing and a new "point-and-shoot" user interface are offered.

Version 3 also has high-resolution Video Graphics Array graphics with full annotation capabilities and support for PCX graphics files, an Eyeball utility and new S-curve models.

The standard edition of SmartForecasts Version 3 costs $595.

➤Smart Software
4 Hill Road
Belmont, Mass. 02178
(617) 489-2743

Caere Corp. has started shipping PageKeeper, information management software.

According to the company, the product was designed to let users search and store information on stand-alone or networked PCs. PageKeeper offers unattended input, data compression and intuitive search capabilities. Information can be automatically indexed without users having to manually input key words, and the company's advanced optical character recognition technology is used. PageKeeper also has a visual user interface and built-in electronic mail.

The product costs $895.

➤Caere
100 Cooper Court
Los Gatos, Calif. 95030
(408) 395-7000

Looking Glass Software, Inc. has announced Version 1.0 of HyperWrite.

HyperWrite allows Microsoft Corp. Windows users to create and play back full-color hypertext presentations. HyperWrite has hypertext features that permit users to hyperlink characters, words, paragraphs and whole documents. Users can "bookmark" and index documents and import graphics or sounds to documents.

A 100,000-word dictionary and spell check is included along with standard cut, paste, copy and drag-and-drop capabilities. A full what-you-see-is-what-you-get working environment is provided.

HyperWrite is compatible with Microsoft Word and most word processing and graphics programs.

HyperWrite costs $149.

➤Looking Glass Software
Suite 459
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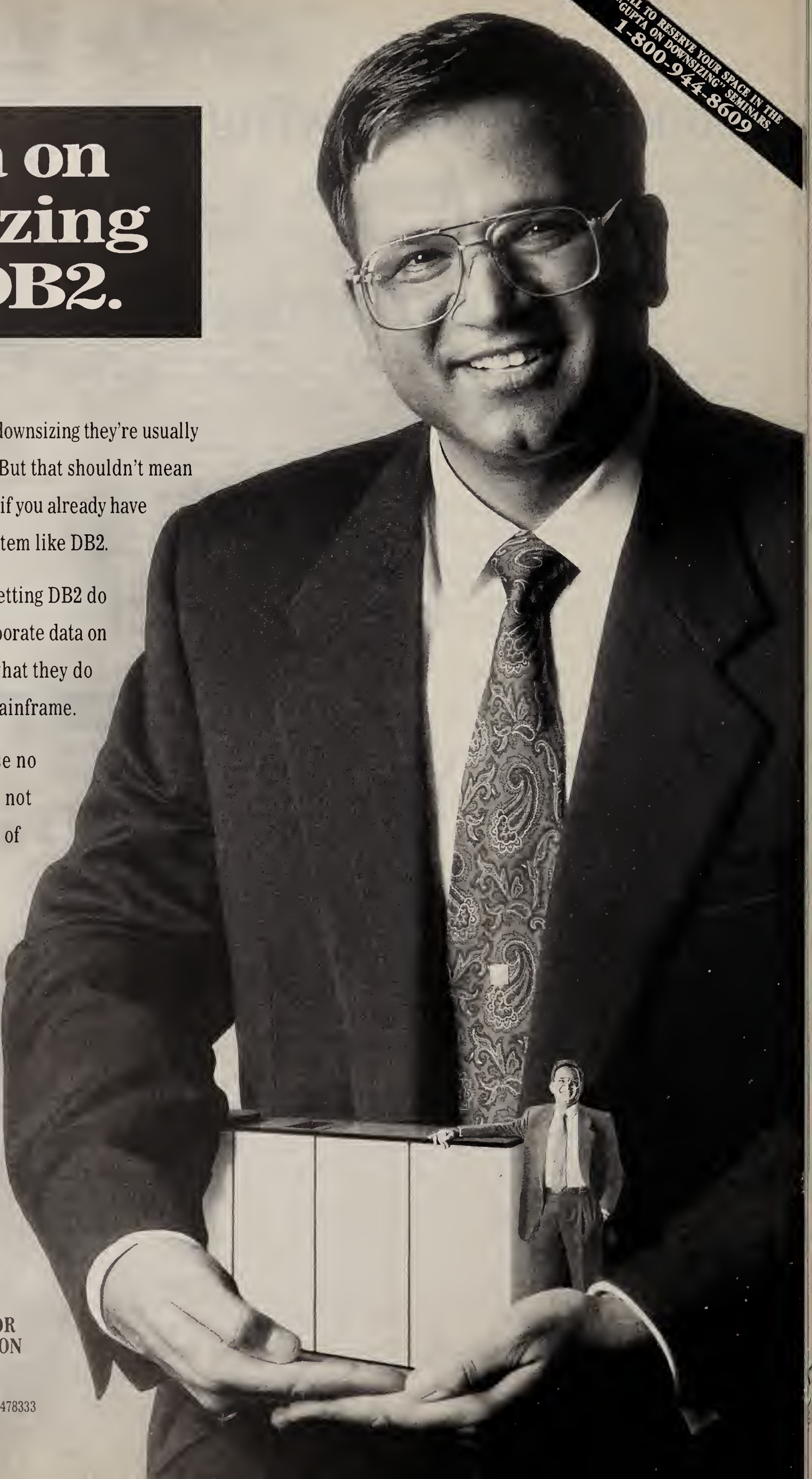

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DEC designs yet another Unix plan

By Maryfran Johnson

The director of scientific computing at Dana Farber Cancer Institute in Boston was in the middle of a recent discussion about Unix with his Digital Equipment Corp. salesman when the DEC salesman abruptly steered the conversation to Microsoft Corp.'s Windows NT.

"I am very bothered by that," said Mohamed el Lozy, the Dana Farber official in charge of computing for the biostatistics laboratory, which runs about 60 DECstations. "I'm a Unix shop, and I don't want my salesman talking about upscale PC operating systems. I shut him up the minute he mentioned NT. We have a huge investment in Unix."

El Lozy's experience highlights DEC's conflicted heart and congenital lack of focus on Unix, an operating system that for years played the role of unwanted second cousin to VAX/VMS. These days, DEC's enthusiasm for NT — still a late 1993 or early 1994 phenomenon for users — seems likely to push Unix even further down the family tree.

This week, however, DEC officials hope to dispel some of the more dismal predictions about the company's Unix commitment during a briefing for press and industry analysts at corporate headquarters in Maynard, Mass. DEC President Robert Palmer will be on hand to lend some high-powered credibility to the revarnished Unix strategy, which centers on DEC/OSF/1 running on new Alpha AXP machines.

Prime-time player

Based on the Open Software Foundation's OSF/1, DEC/OSF/1.2 will be formally launched on the Alpha platform late next month. More than 500 early users have been experimenting with DEC/OSF/1 on Alpha machines for the past few months, and the company feels it is finally ready for prime time.

Also next month, at the UniForum Unix trade show in San Francisco, DEC will unveil another batch of Unix applications committed to the Alpha line. So far, some 300 applications have been promised to DEC/OSF/1 by independent software vendors, a company spokesman said.

What users can expect to hear from DEC in the coming weeks are details of how the company will support and develop its three strategic operating systems — VAX/VMS, DEC/OSF/1 and Windows NT — as well as its commercial Unix directions.

Also on DEC's agenda are plans surrounding the Unix System V operating system, which will belong to Novell, Inc. as soon as Novell's acquisition of Unix System Laboratories, Inc. is completed.

But for a company that has altered its Unix plans as frequently as Madonna changes her hair style, persuading users to buy into the latest version of the strategy may prove extraordinarily difficult.

"The signal I would like from DEC is really something they cannot provide too easily," el Lozy said. "I would like to be sure they're here to stay. Can they make money in today's market?"

That may be a problem. DEC's history with Unix during just the past few years is a textbook study of missed opportunities and mangled marketing schemes.

"You name it, they didn't do it right," said John Morrell, an analyst at International Data Corp. in Framingham, Mass. "They didn't put the right functions into the operating system or set up the right sales structure or distribution channel. And they were always afraid of cannibalizing their VMS business."

Three-front campaign

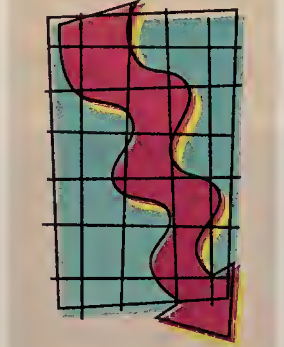
DEC's next move, Morrell said, will be to aim its marketing efforts at three distinctly different user audiences. "They will push VMS in the data center community, use NT as their low-end distributed client/server platform and sell Unix to the technical market," he said.

The 64-bit structure of DEC/OSF/1.2 may hold sharp appeal for the technical market, despite the case of whiplash DEC has given those users

DEC, *page 38*

Hold slipping

If one measure of success in the Unix sector is market share in the workstation market, DEC may have some problems. Dataquest, Inc. in San Jose, Calif., reported that DEC's share of the $9 billion worldwide workstation market slipped from nearly 12% in 1991 to 9% last year.



Mission-critical applications

Low-cost approach brings fault tolerance to Commerce agency

By Gary H. Anthes
KANSAS CITY, MO.

The term "fault tolerant" conjures up images of ultrareliable but enormously expensive computer systems. At the U.S. Department of Commerce's National Logistics Support Center, that is half right.

For a few thousand dollars, the center has equipped its mission-critical shipping system with mirrored removable disks and redundant disk controllers. The center also installed a backup server that can take over processing in about half an hour if the primary unit fails.

The center warehouses and ships supplies for a half-dozen or so federal customers including the National Weather Service and the U.S. Department of Agriculture. It processed 75,000 orders last year, including a number of emergency shipments in the wake of Hurricane Andrew — 99% of them within 48 hours, according to George Lambert, a computer specialist at the center.

"If we lose our shipping system, everyone can go home," Lambert explained. "If we don't ship, we may have a radar station that's not running or a weather station not working or an airport that's not up." An unreliable earlier system, in addition to being "maxxed out," occasionally did cause problems like that, he said.

Palatable price

For about $100,000, which included custom development of the shipping application, the Commerce Department last year installed a nearly fail-safe local-area network connecting two user workstations and two servers — a primary and a backup unit — and Intel Corp. 80386-based PCs running DOS. The LAN runs the LANtastic Ethernet operating system from Artisoft, Inc. in Tucson, Ariz.

The server uses Immunity software for disk mirroring, which is available for $249 from Unitrol Data Protection Systems, Inc. in Vancouver, B.C. Every write operation simultaneously updates both hard disks in the server.

The servers are also fitted with two 212M-byte Small Computer Systems Interface (SCSI) hard disks and controllers in removable trays, which are available for less than $1,000 each. If the primary drive fails, it is removed for repair and its twin is swapped in to replace it. Then, a new twin is pulled from the backup server to replace the old twin.

Lambert said that when the primary server is rebooted, the Immunity software recognizes that the new disk does not contain the same data as its twin, and it pauses to write all files onto the new disk, which brings the disks into exact conformance.

If the primary server goes down because of some problem other than the disk failure, both disk units can be moved to the backup server. That was required recently when the motherboard on the primary server failed. The system was up and running on the backup within 30 minutes, Lambert said.

No worries

Darrell Wallace, manager of operations, said the real comfort comes from not having to worry about lost data. "If the system went down and we had to recreate the data, it could take days, if we had the information at all," he said.

Keith Sitter, a value-added reseller who installed the hardware, said the Commerce Department bought a lot of protection at a bargain price, but it would be possible to get a reasonable level of fault tolerance by spending even less.

"You can take a system with a 40M-byte hard drive and buy another by mail order for $200 or so and the [Immunity] software for $250. So for less than $500, you could have a 40M-byte mirrored system. That gives you an on-line safety net instead of the traditional backup in which you have to restore."

ON SITE

Department of Commerce's National Logistics Support Center
Kansas City, Mo.

Challenge: To prevent system downtime so other Commerce Department agencies receive supplies in a timely manner.

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XTree unveils NetWare management tools

By Elisabeth Horwitt
SAN LUIS OBISPO, CALIF.

A suite of software products recently introduced by XTree Co. is said to address many of the tasks associated with managing Novell, Inc. NetWare local-area networks at a comparatively low price.

Among the capabilities provided by different XTree Tools for Networks modules are the following:

- Running tests of network and workstation performance according to user-defined thresholds.
- Changing and documenting NetWare server configurations, including user profiles, groups, queues and system files.
- Monitoring server performance in areas such as CPU and disk utilization.
- A help system to guide users through common tasks such as adding memory to the machine and using graphic depictions.

The product is "about six things rolled into one," said Aldon Hynes, vice president of mortgage trading systems at Union Bank of Switzerland in New York. He has been testing the product for a couple of months.

With the WatchLAN module, he said, the administrator can set thresholds so "anytime the network does something out of the norm, you get a message at the bottom of your screen."

For example, "if you've got 18 people logged onto a 20-node Novell server, it alerts you that you're about to run out of connections," Hynes said.

In addition, the system monitors areas such as how many files are open, how many cache buffers have data waiting to be written to disk and network utilization levels, Hynes said.

XTree Tools for Networks, Novell Edition, is priced at $695 per server, with each additional server priced at $395.

DEC designs yet another Unix plan

CONTINUED FROM PAGE 35

in the past, the analyst suggested. Many technical users bought into the DECstation/DECsystem line of workstations and servers, which ran DEC's own Unix implementation, Ultrix.

Then DEC put its Unix eggs in the OSF/1 basket and halted development work on Ultrix.

Unix confusion

A once-promised migration path from Ultrix to DEC/OSF/1 on the DECstation line fizzled last summer.

DEC's Unix strategy became increasingly murky as various officials — such as David Stone, former head of all software development at DEC, who now works at AT&T — informed Ultrix customers that they should start planning to move to Alpha workstations running DEC/OSF/1 in 1993.

That, in essence, told DEC customers that the DECstation line was a dead-end platform running a doomed operating system.

In the meantime, the other OSF sponsors — both IBM and Hewlett-Packard Co. — continued to improve their own AIX and HP/UX operating systems while cautiously pulling back from their original vows to adopt the entire OSF/1 kernel.

"Yes, they've lost ground with technical users, but if DEC can be the first company to jump on the 64-bit bandwagon, the techies may follow," Morrell said. "For users who want to get more satellite data into their machines in real time, 64-bit will make a big difference."

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New Products

Fluent announces NLM for motion video

Fluent, Inc., a video networking company in Natick, Mass., has announced FluentLinks 1.0, a NetWare Loadable Module (NLM) that enables multiple users to retrieve and play motion video segments on local-area networks running Novell, Inc.'s NetWare v3.11 operating system.

FluentLinks provides shared storage, efficient video distribution and access. It turns full-motion video and synchronized audio into digital data that can be created, stored, edited and networked in the same way text and graphic files can.

The largest stumbling block to using video on LANs has been the high-bandwidth requirements of video. Fluent claims to have solved this problem by using a scalable video architecture that dynamically adjusts video rates with minimal impact on perceived image quality while delivering all audio data intact and accurately synchronized to the video.

FluentLinks servers must be 386- or 486-based with clock speeds of at least 33 MHz. The servers must have 8M bytes of random-access memory, an Extended Industry Standard Architecture (EISA) system bus, at least one Small Computer Systems Interface hard disk and a high-performance 32-bit EISA network card. FluentLinks costs $5,995 for a 10-user license and $9,995 for a 20-user license.

— Michele Dostert

FolioViews upgrade features WYSIWYG

Folio Corp. last week released a major upgrade to its Folio Views electronic publishing software that features what-you-see-is-what-you-get display and output, cross-platform compatibility and real-time editing and updating.

The company, a subsidiary of Mead Data Central, Inc., said those features were among 10 key enhancements in Folio Views 3.0, which is a tool designed to create, manage and access electronic reference information on floppy disks, CD-ROMs and local-area networks.

The product will be available initially on MS-DOS, Microsoft Corp. Windows and Apple Computer, Inc. Macintosh systems. Other new features include multiuser editing and shadow files for modification and annotation.

The DOS and Windows versions will be available during this quarter, while the Macintosh version will be available during the third quarter.

The full-function Folio Views 3.0 costs $495 per user; a limited-function version costs $195 per user. *— James Connolly*

OSIWare announces X.400 gateways

OSIWare, Inc. announced software that translates proprietary electronic-mail protocols to the X.400 protocol for companies that use X.400 as their central E-mail highway.

The software "gateways" include a X.400-to-CC:Mail gateway that runs on major Unix platforms. It differs from current DOS-based CC:Mail-to-X.400 gateways — which some users complain are congested — because it runs on the Unix's multitasking platform.

OSIWare also announced an X.400-to-Microsoft Corp.'s Mail gateway that runs on Unix workstations and a new version of Message 400 for MS-DOS software that lets DOS-based PCs run X.400 over a Transmission Control Protocol/Internet Protocol network. The products require users to have OSIWare's Message 400 messaging system.

Prices for the CC:Mail and Mail gateways will start at $6,500. Prices for standalone DOS software will start at $1,000.

— Lynda Radosevich

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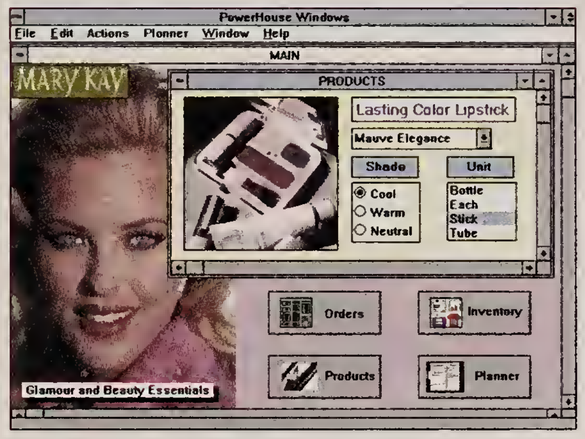

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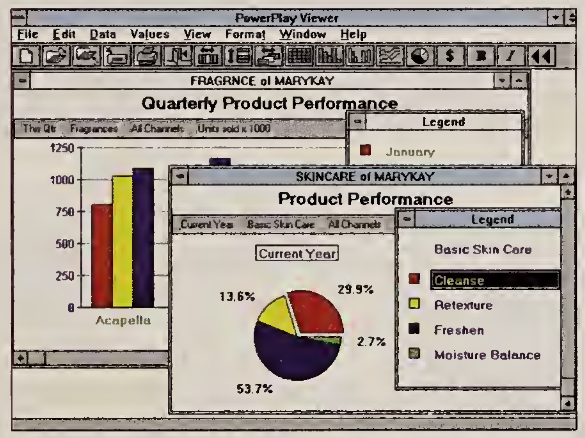

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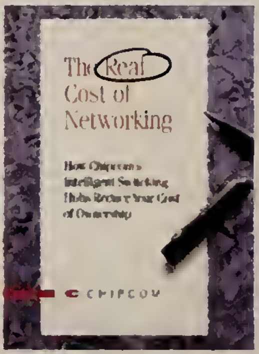

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Unix, MVS tighten ties

DataMover enables data transfer over 'open' protocol

By Gary H. Anthes
RESTON, VA.

Systems Center, Inc. has extended its data-transfer product line, Network DataMover (NDM), to enable Unix-to-MVS and Unix-to-Unix file transfers over Transmission Control Protocol/Internet Protocol (TCP/IP) networks.

DataMover incorporates a "process language" by which users can control its action. For example, it can be set up to do a data transfer every day at a certain time, verify the success of the transfer, initiate an application to process the transferred data and notify an MVS or Unix user of transfer status.

Systems Center edge

TWO APPROACHES FOR FILE TRANSFER:

	NDM for Unix	TCP/IP FTP
Transfers text and binary files	Yes	Yes
Allows unattended operations	Yes	No
TCP/IP connections needed per transfer	1	2
Checkpoint/Restart	Yes	No
Compression and parallel transfers	Yes	No
Network resource tuning	Yes	No
Programmable API interface	Yes	Minimal
Conditional logic	Yes	No
Authorization facility	Yes	No
User ID and password-encrypted	Yes	No
Stats available for all transactions	Yes	No

CW Chart: Stephanie Faucher

The product also incorporates security features that allow user authentication without sending passwords over the network. It allows users and nodes to be given different levels of authority and keeps a detailed audit trail of activity in a statistics file.

For Unix variants

The product, NDM for Unix, operates on the IBM RISC System/6000, the NCR Corp. 3000, the Hewlett-Packard Co. 9000, Sun Microsystems, Inc. SPARCstations and Digital Equipment Corp. reduced instruction set computing-based computers. Additional Unix offerings are in the works, the company said.

Simultaneously, Systems Center announced Release 7 of NDM-MVS, which allows IBM MVS-to-MVS and MVS-to-Unix file transfers over TCP/IP.

NDM for Unix is geared for distributed systems in which remote, Unix-based applications must be coordinated with headquarters systems, which are typically MVS. It is also intended for intercompany data exchange as, for example, when credit unions swap loan histories with banks or when long-distance telephone companies exchange billing data with local carriers.

Dar Busa, director of product management at Systems Center, said any user of a TCP/IP network can do data transfers using the embedded File Transfer Protocol (FTP) facility. "But our customers have told us FTP is a commodity file-transfer package. It moves a file from A to B — end of story." He said NDM for Unix offers much more.

In particular, Busa said, customers want more security than is offered by the "commodity" solutions. "About 65% of our customers use NDM for intercompany transfers, for [electronic data interchange]-type applications. Security is a concern because they don't have control over both ends of the transfer."

According to Rick Villars, director of networking architectures at International Data Corp., the product will be of substantial interest to traditionally mainframe-centric firms that are deploying Unix applications and also to Unix shops that have discovered they need more features and safety than is offered in FTP.

"It's another confirmation that there really are a lot of large companies doing significant file transfers. People are starting to do some critical downloads and transfers, not just on a casual basis."

Happy customer

AT&T, a beta-test user that guided Systems Center in the development of NDM for Unix, said it plans to deploy the software throughout the company as its standard for file transfer.

Louis DeTroia, file-transfer product group manager at AT&T's Information Management Services Division, said the division had been evaluating NDM for Unix for a month and found that it works well.

He said AT&T asked Systems Center to develop the product in order to provide "one consistent file-transfer base software to run against multiple platforms" for the company. It will replace homegrown file-transfer software, he said.

DeTroia said AT&T is moving mainframe applications to Unix-based local-area networks, but it still retains many files on MVS mainframes. That requires, for example, regular transfer of accounting data from a centralized general ledger system to sales offices on Unix LANs, he said.

DeTroia said NDM for Unix will be a key to AT&T's plan to replace networks that use proprietary protocols such as IBM's Synchronous Data Link Control with less costly TCP/IP networks throughout the corporation.

The product is slated to be available March 31. It will be priced between $1,500 and $18,000 per server and between $375 and $4,500 per client machine.

Firms choose single backbone for SNA, LAN internetworks

By Elisabeth Horwitt

■ A hefty percentage of Fortune 500 companies have pretty much decided to integrate their IBM Systems Network Architecture (SNA) and local-area network internetworks, according to a recently published study by Salomon Brothers, Inc. The primary reason: the cost savings to be garnered from having one internetworking backbone instead of two.

However, while some companies reported that they are already enjoying the cost benefits of the move, others are still sitting on the fence, waiting for the right multiprotocol router with all the features they are looking for.

For example, Metro Toronto, the Canadian civic government organization, installed Cisco Systems, Inc. routers last May to handle a bevy of networking protocols, including Apple Computer, Inc. AppleTalk, Novell, Inc. IPX, Transmission Control Protocol/Internet Protocol (TCP/IP), Digital Equipment Corp. DECnet and SNA, according to Charles Peyton, a consultant to Metro Toronto.

The Cisco routers handle traffic across a Fiber Distributed Data Interface backbone at Metro Hall, the seat of Toronto civic government, and send it out across T1 and 56K bit/sec. links to five remote sites, Peyton said. The routers handle the SNA traffic by encapsulating it in TCP/IP packets, he added.

By using the same router backbone instead of two sets of private lines to connect SNA and inter-LAN traffic, Metro Toronto is "probably saving between $2,000 and $3,000 a month on line costs," Peyton said.

Single port

In addition, the routers can concentrate transmissions from SNA devices in different buildings or floors into a "virtual multidrop" circuit that feeds into a single port on an IBM front-end processor, Peyton said. Ordinarily, each physical unit in a different location would need a separate front-end port. This router feature is expected to enable Metro Toronto to get rid of one front-end processor this year and save $14,000 per month in leasing costs, Peyton said.

Peat Marwick Main & Co.'s Toronto branch installed a similar configuration of Cisco routers last summer so that a 256K bit/sec. slice of the corporate T1 backbone could be used to support TCP/IP,

Backbone, *page 42*

Commentary

Gary H. Anthes

A U.S. 'infostructure'

Information "infrastructure" is the buzzword du jour. Everyone says the country needs one, but exactly what is it? Try this quiz:

The future U.S. information infrastructure will be:

A. A broadband fiber-optic network linking every office, classroom and home in the land.

B. A government network allowing supercomputers at remote labs to collaborate at gigabit speeds on problems in quantum physics and climate modeling.

C. A natural scale-up of the existing Internet.

D. A mosaic of copper, fiber and wireless technologies cobbled together by telephone, cable television, computer, satellite and other companies.

If you picked A, you probably work for a telephone company. With a little help from Washington — regulatory relief, tax incentives and the like — you will find the $300 billion needed to get the network installed early in the next century.

If you said B, you are either a supercomputer bigot or you have been asleep for more than a year. This was an early concept for the

Anthes, *page 43*

Firms choose single backbone for SNA

CONTINUED FROM PAGE 41

AppleTalk, IPX and SNA encapsulated in TCP/IP, according to Kevin Byrne, a senior technical adviser at the accounting firm.

"All our major sites already have SNA traffic from the mainframe, so we wanted to have all those [LAN] protocols over one link, not separate ones," he added. The rest of the T1 lines are used for voice.

Cisco's TCP/IP encapsulation feature has worked fine so far; indeed, "users report that printer jobs actually function better" than the original pure SNA links, primarily because of a TCP/IP error-checking feature that minimizes job interruptions, Byrne said.

Peat Marwick chose Cisco partly for its name and partly because at the time competitors did not have SNA support, Byrne said. Now, however, most major multiprotocol routers can handle SNA.

The Travelers Corp. and 3M Co. are still trying to find the ideal router candidate for their critical corporate backbones. During the past few years, Travelers has evaluated IBM's 6611, Network Equipment Technologies, Inc.'s version of a Cisco router and Crosscomm Corp.'s product, according to Steve Simon, senior telecommunications engineer at the insurance company.

Demanding shoppers such as 3M and Travelers pointed to functional gaps that could cause network managers trouble over the long haul. 3M, for example, wants a router that can handle IBM's Advanced Peer-to-Peer Networking (APPN) protocols, according to Chris Amley, a lead analyst in telecommunications at 3M.

Last week, IBM was about to start shipping APPN support on the 6611; however, other router vendors' schedules for implementing the peer-to-peer SNA protocol are vague at best.

Another serious gap in the SNA-to-LAN internetworking industry is the lack of a standard for managing SNA devices, or SNA traffic on a router, via Simple Network Management Protocol (SNMP).

The Internet Engineering Task Force meeting next month is likely to set up a working group to develop SNMP management information bases to manage SNA [CW, Feb. 1]. In the meantime, however, users are basically stuck with using IBM's NetView to manage SNA devices and SNMP-based systems to manage routers and other LAN networking devices.

While Metro Toronto is still using NetView to manage logical SNA links on its backbone, the organization is "definitely interested in SNMP management of SNA," Peyton said. "Ultimately, we want to run TCP/IP on the host."

In Brief

WilTel adds services

Long-distance carrier **WilTel** said it will deploy a suite of value-added products and services in 1993. These include network design and testing, collocation of user equipment in its central offices and network management. WilTel business units can reportedly coordinate through a single point of contact for support.

Prioritizing traffic

Cascade Commmunications Corp. in Westford, Mass., announced that its STDX family of frame-relay switches can now make use of a traffic prioritization feature offered by **Cisco Systems, Inc.** routers. This feature is said to avoid session loss for systems using time-sensitive protocols.

NetWare support added

Attachmate Corp.'s Extra PC-to-mainframe software will support Novell, Inc.'s NetWare for SAA local-area network-to-host communications platform, the Bellevue, Wash., vendor announced. The support is scheduled to start rolling out early this year.

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Anthes

CONTINUED FROM PAGE 41

National Research and Education Network (NREN), championed in the late 1980s by then-Sen. Albert Gore. The NREN is becoming politically correct by agreeing to serve the needs of real-world people, some of them in kindergarten.

If you chose C, you are in sync with folks such as Steve Wolff at the National Science Foundation, who said, "We feel intuitively that the domestic Internet and the distributed collaboration that it facilitates are rapidly creating a national workplace without walls."

Finally, if you picked D, you share a concept held by Michael Roberts, networking vice president at Educom, an association of colleges. He said telephone companies will have extended fiber to 80% of all neighborhoods by 1995 — without help from the government — in order to meet their own cost and service goals.

Then, Roberts said, users in homes and offices could get broadband digital access via smart hubs in the neighborhood connected to existing wires from the local cable television company. Or they could tap into the digital infrastructure via an area radio transmitter.

In the early days, the infrastructure was seen as solving the so-called "grand challenges" in science. In the latest twist, the emphasis has shifted to economic goals, specifically job creation. It is these shifts in goals and priorities that make it hard to say precisely what the infrastructure will look like.

So let's turn to another question: Who needs the infrastructure? It is nice to know your third-grader will be able to download all the works of Shakespeare from the Library of Congress in less time than it takes her to find Stratford-on-Avon on a map, but what is in it for us corporate types?

The Electronic Frontier Foundation (EFF) argues for deployment of ISDN as a relatively quick, inexpensive step on the way to fiber optics, with the first step already having been taken by many companies.

That is just the thing for telecommuting. Under the Clean Air Act, employers in Los Angeles, New York and six other cities must reduce car commuting by 25%. Calling ISDN a "LAN extender," the EFF said it would let workers at home access E-mail, applications and files with only slightly slower response times than they get at the office.

Craig Fields, head of the Microelectronics and Computer Technology Corp. (MCC), points out that a number of large companies have lowered costs and improved quality by building their own data superhighways linking their operations with suppliers and customers. A national public infrastructure would offer the same benefits to smaller companies and would create jobs, he said.

For Fields, it is more than just a nifty concept. The MCC has established the Enterprise Integration Network (EINet), which it calls "the first national internetwork infrastructure for business." EINet is a layer of services — so far including directory services, security features, E-mail and electronic remittance — on top of the commercial Internet services of UUNet Technologies, Inc.

What makes EINet attractive is that it provides a standard for interconnection between companies, which is essential as a cost-saving measure for smaller firms.

It is too early to judge the success of EINet, but it and similar services suggest that the information infrastructure — at least for commercial users — could evolve from the ad hoc growth of the Internet rather than from some grand strategy from some segment of the communications and computer industries.

Anthes is *Computerworld*'s senior correspondent in Washington, D.C.

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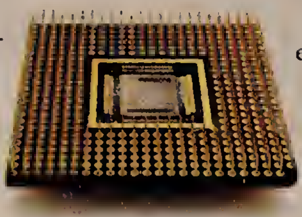

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- Rightsizing in the Data Center: Choices and Opportunities
- Evolving Network Architecture
- The Services Industry Gold Rush
- Rightsizing War Stories: Lessons for Success

Track 2 - Personal Systems

- Tomorrow's Trends in the PC Systems Market
- PC Software Confronts the Enterprise
- Messaging and Advanced Group Applications
- Channel Management in the 90s

Track 3 - Winning the Midrange Wars

- Rightsizing for Technical Computing
- Are Midrange Systems Commodities?: A Survival Guide
- As the Unix Battles Rage, the War with NT Looms
- Midrange Contradictions

Track 4 - Networking

- Customer Directions: Managing Networking Investments
- Network Applications: Mobile Data Networks Add Another Dimension
- Local Area Networks: The Platform for Distributed Processing
- The Access Boundary: Understanding the Edge of Network Intelligence

Track 5 - Global Markets

- The New Europe: Opportunities and Obstacles for IT
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Stuck between IBM and a hard place?

By Johanna Ambrosio

In this time of transition for the entire computer industry, nothing is certain anymore — not even IBM's once-vaunted reputation for providing superior technical support and service. Although many mainframe customers say things are still fine on the support front, others report some glitches, which they are handling in different ways.

What is a customer in the midst of a technical crisis to do?

IBM still has an impressive array of technical talent in its ranks, most observers said, but the early retirement programs have taken their toll. It is not always easy to find the person who is most knowledgeable in a specific technical arena, customers said. This situation will likely be worsened by the continued thinning of the IBM employee ranks, which will decrease by 25,000 people this year, and by a heightened internal sense of chaos following the recent resignation of IBM Chairman John Akers.

Some customers are faring better than others. Rino Bergonci, vice president at United Parcel Service, Inc. in Mahwah, N.J., said, "We have an account team here with specialists in different technical areas. Their purpose is to support us, no matter how IBM is set up internally, and they do. I'm pretty sheltered from all the changes going on."

Others are not as lucky. Jonathon Palmer, chief information officer at Barnett Banks, Inc. in Jacksonville, Fla., said, "There has been a dilution of technical talent in the company. I've witnessed this not only here in Jacksonville but at other companies in other locations."

So what is a customer in the midst of a technical crisis to do? A couple of techniques have been used effectively by some customers. If you have tried the usual channels and a reasonable amount of time has passed without a response, call the local sales office or your sales team and demand to speak to the person in charge. Presumably, that person should be able to cut through some of the internal red tape and at least tell you where to call to locate the technical gurus in a specific subject.

After the crisis — depending on the severity of the outage — notify your management that there has

IBM, *page 48*

Big Blue support report card

How is IBM support and service faring in large shops?

- **Rino Bergonci, vice president at United Parcel Service in Mahwah, N.J.** "Things are just fine."
- **Jonathon Palmer, CIO at Barnett Banks in Jacksonville, Fla.:** "There has been a dilution of technical talent in the company."
- **Joseph Giannotti, commissioner of the Computer and Data Communications Services Agency for the city of New York:** "I wouldn't say the impact has been devastating, but there has been significant change. People have to make more phone calls, ask more questions." He has used IBM's Information Network to cut through some of the telephone tag.
- **Al Smith, deputy director at the Teale Data Center in Sacramento, Calif.**, the state of California's largest data center: "A lot of their better people have left over the last several years and have taken jobs with other companies or consulting groups. Some of them do work for us on a consulting basis."
- **Irwin Bernstein, vice president of planning and administration at Maidenform, Inc. in Bayonne, N.J.:** "I've been dealing with IBM since 1960. Back then they were mother — you'd go to them for everything: hardware, software, chicken soup, Band-Aids — everything. Now the world has changed."

Looking ahead

Unisys outlines Unix strategies for 1993

By Thomas Hoffman

Unisys Corp. executives recently outlined the company's Unix strategies and product plans for the year ahead, which users and analysts have praised for meeting the demands of the open systems market.

"What makes the Unisys strategy exciting is it's the right products at the right time," noted Rikki Kirzner, principal analyst at Dataquest, Inc., a San Jose, Calif., market research firm (see story, page 26).

Unisys plans to roll out the following products in the coming year:

- A mainframe transaction processing monitor designed to downsize IBM CICS applications to Unix. Slated for April delivery.
- A port of the CA-Unicenter systems management tool kit onto the Unisys U 6000 Unix-based servers, which Unisys is negotiating with Computer Associates International, Inc. for the spring.
- Late 1993 delivery of a microkernal-based modular operating system technology designed to allow communication among Unix systems as if everything resided on the same machine. The microkernal would also enable users to run MS-DOS 5.0 and IBM's OS/2 2.0 operating systems simultaneously with Unix platforms. The product was developed with French developer Chorus Systems.
- Plans to provide Novell, Inc./Unix System Laboratories, Inc.'s (USL) UnixWare on the U 6000 servers in April.
- Use of Intel Corp.'s Pentium microprocessor in U 6000-

Unix, *page 49*

Data centers must work smarter

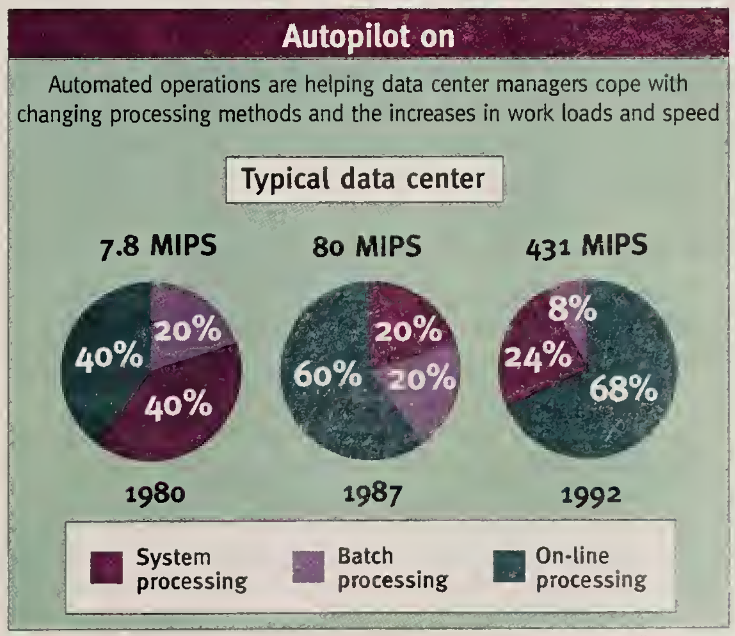
By Kevin Burden

With the demand for information technology growing in the face of budget cuts, the data center's contribution to profits will come not only through consolidation but also through automation, according to a recent report by Computer Technology Research Corp. in Charleston, S.C.

Doing more with less mandates that data centers operate smarter. But this is becoming increasingly difficult as systems with complex technologies continue to make inroads, the report said. Automation tools will allow managers to concentrate more on managing and less on daily operations.

The job of data center manager/network manager "is becoming sort of a hybrid position," report author Barbara Francett said. "As more client/server and distributed systems are implemented, it's going to be the data center manager who will need to become familiar with them."

Francett noted that automating a data center can be demanding in lean budget times: Automated tools can be a heavy investment, and the gains are achieved only over time. This has made consolidation a sensible first step for many firms when they discover that banding several scattered data centers into one can have an instantaneous effect on the bottom line.


Autopilot on

Automated operations are helping data center managers cope with changing processing methods and the increases in work loads and speed

Source: Gartner Group, Inc.

CW Chart: Janell Genovese

While consolidation cuts the cost and complexity of running multiple sites with dedicated staffs, it is automation and integrated operations that will help manage increased work loads.

Dealing with employee reactions to the automation news is where data center managers might feel the most challenged. They must reassure those left to work on the project that they will be retrained for more rewarding positions, Francett said.

The study concluded that the future of data center management is not data center operations, but management. The focus will be more on managing the distributed networks and less on running operations.

So while only a few companies may achieve the absolute "lights out, machines running machines" operation, it makes sense to head in that direction anyway, according to the report.

Ross moves ahead with flexible product strategy

By Melinda-Carol Ballou

Ross Systems, Inc., purveyor of accounting, human resource and process manufacturing software, is forging ahead with a strong product set and secure financial results.

Revenue for the company's second fiscal quarter increased 17% over the same period last year, and revenue for the previous six months increased 13%.

The company previously focused its applications on the Digital Equipment Corp. market, but during the past year and a half, the firm has diversified both the range of its products and the platforms on which they run.

Ross has made a series of company acquisitions over the past few years, including that of Pioneer Computer Corp. in 1991 and its Promix process manufacturing software and Gembase fourth-generation language (4GL). In addition, the company has announced support for platforms from Hewlett-Packard Co. This strategy has served Ross well, according to J. Pat Tinley, executive vice president of the company.

A new client/server-based product line, dubbed Renaissance CS, is based from the "ground up" on the Gembase 4GL. This 4GL development environment "gives us database and platform independence," Tinley said.

The environment is also proving to be attractive to users. Gary Klawans, controller at Nobelpharma USA, Inc., a Chicago-based distributor of dental implants, said his firm opted for Renaissance CS because of its 4GL support.

"We wanted the flexibility of a 4GL RDBMS. We took a look at the applications and tools and how they fit together in our environment and were integrated into the Gembase 4GL, and that made the decision for us," Klawans said.

Competitors on scene

A number of accounting vendors, such as PeopleSoft, Inc. and Oracle Corp., have announced client/server implementations, and announcements from others such as The Dodge Group and Dun & Bradstreet Software are imminent.

Ross' announcement of Renaissance CS is therefore timely. The products will also allow processing to be distributed across both the client and the server, according to Claire Gillan, manager of applications at International Data Corp., a research firm in Framingham, Mass.

Server versions are now available for Digital Equipment Corp.'s Open VMS and Ultrix and HP's HP/UX; client support for Apple Computer, Inc.'s Macintosh, Microsoft Corp.'s Windows and the Open Software Foundation's Motif is slated to ship in the fall. Ross will also provide support for HP-MPEIX, OSF/1 and Windows NT.

And while Ross' financial results for 1992 dipped in the first two quarters, they rebounded as a result of Promix sales in the process manufacturing arena for Unix-based platforms, according to Tinley. He said 43% of Ross' software revenue resulted from Promix licensing revenue.

"Promix has done very well," agreed Peter Kastner, a vice president at Aberdeen Group, a market research firm in Boston. "Promix helped turn Ross' financial results around and gave them a shot in the arm. Not a lot of companies have focused on process engineering. It looks as if [it] is doing very well and has an opportunity to become a big player in the application downsizing market."

Speedy Cray prototype due

Cray Computer Corp. said recently that a working prototype of its Cray-3 had achieved a performance of 2.08 nsec.

The Colorado Springs company was spun off from Minneapolis-based Cray Research, Inc. in 1989 so that Cray founder Seymour Cray might pursue his work on a computer architecture based on gallium arsenide integrated circuits.

Cray Computer reaffirmed last week that a Cray-3 demonstration system will be available to the National Center for Atmospheric Research in Boulder, Colo., by the end of the first quarter.

The initial Cray-3, with four processors, will sell for about $10 million, according to Cray Computer.

—Ellis Booker

Stuck between IBM and a hard place?

CONTINUED FROM PAGE 47

been a problem, ask for a meeting with IBM and ask what assurances IBM will give you so this will not happen again. If your top executives are in the meeting, or at least represented, chances are good that you will get some response.

A midsize IBM customer recently took this tack and received, in writing, information on how IBM was changing its internal structure to meet his technical needs more effectively.

Joseph Giannotti, commissioner of the Computer and Data Communications Services Agency for the city of New York, said he has also seen differences in IBM's service levels. "I wouldn't say the impact has been devastating, but there has been significant change. People have to make more phone calls, ask more questions."

E-mail answers

One thing that has helped with getting effective technical support, Giannotti and others said, is using IBM's Information Network to ask questions electronically and get responses back from technically savvy IBM employees. "This can save days," Giannotti said.

Al Smith, deputy director at the Teale Data Center in Sacramento, Calif., the state of California's largest data center, said he has taken a tried-and-true tack with his IBM field-support team: He hires the better IBMers as consultants. "A lot of their better people have left over the last several years and have taken jobs with other companies or consulting groups," he said. "Some of them do work for us on a consulting basis."

Things will likely get even more confusing for customers as they fight their way through an ever-changing IBM bureaucratic maze. Some long for the good old days.

"I've been dealing with IBM since 1960," said Irwin Bernstein, vice president of planning and administration at Maidenform, Inc. in Bayonne, N.J. "Back then they were mother — you'd go to them for everything: hardware, software, chicken soup, Band-Aids — everything. Now the world has changed."

Senior editor Elisabeth Horwitt, senior correspondent Jean S. Bozman and correspondent Thomas Hoffman contributed to this story.

In Brief

Unisys wins part of the outsourcing pie

Unisys Corp. has been awarded a piece of the recent $47 million, 10-year outsourcing agreement between IBM's **Integrated Systems Solutions Corp.** and **McDonnell Douglas Corp.** Under the agreement, Unisys will provide outsourcing services for Unisys 2200 series mainframe computer systems as well as other services, hardware and software to McDonnell Douglas' aircraft unit in Long Beach, Calif. Unisys will offer jobs to McDonnell Douglas data center staff members who currently operate and maintain some Unisys computer equipment.

VMark Software reports strong quarter

Software vendor **VMark Software, Inc.** reported a 73% growth in net income to $856,000 and 58% growth in revenue to $5.8 million during the fourth quarter. It also reported annual income of $2.8 million and revenue of $18.8 million, up 61% and 52% respectively, over 1991.

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Unisys outlines Unix strategies

CONTINUED FROM PAGE 47

based systems by midyear.

Kirzner and other analysts said they have witnessed a growing demand among IBM CICS users to download mainframe-based applications onto Unix platforms.

"Clearly, the vast majority of Legacy user sites are running applications in CICS," said Kevin O'Neill, vice president of research at the Business Research Group, a Newton, Mass., market research firm. The challenge in migrating CICS applications onto distributed environments such as Unix, O'Neill said, is to convince users that the downloaded applications will be secure and manageable because Unix "has a negative reputation for security and ease of use."

But the planned CA-Unicenter to Unix systems management port for the U 6000 servers should help ease those concerns, O'Neill noted. "CA-Unicenter will help that robustness. It makes an interesting combination," O'Neill added.

Users seemed excited over the planned CA-Unicenter port. "A strong systems management product is needed on these systems, especially as more commercial applications are moved to Unix platforms," noted Fred Komoroski, director of MIS at the Automobile Club of New York in Garden City, N.Y. Last summer, the organization added a U 6000/65 server to its Unisys 2200 mainframe system to support its emergency road service.

The addition of the U 6000/65 server enabled the auto club to eliminate a 2200/200 mainframe, which helped the organization slash its information systems budget by 15% in annual hardware, software and maintenance costs. The auto club downloads membership information from its 2200/400 mainframe to its U 6000/65 server each day. When customers call in for emergency road service, the system checks the customer database on the U 6000 to verify membership and then examines a Unisys Mapper fourth-generation language database to determine which service station is physically closest to the motorist.

An electronic order is then sent over an X.25 network to the service station, which dispatches a tow truck. Komoroski said the auto club has experienced a six- to seven-times improvement in response time using the U 6000 server.

In fact, Komoroski said the auto club plans to replace its mainframe with more cost-effective servers in the next four years, so Unisys' plans to unveil Pentium-based U 6000 servers fit right into the auto club's strategy. "If you look at what we're doing now with the U 6000/65, the mainframe would cost us two to three times [as much] to run our emergency road service. [Pentium] would make the mainframe almost obsolete."

Joseph G. Brown, vice president of marketing for Unisys' Unix Systems group, said the vendor also plans to adopt the USL/Tivoli Systems, Inc. Distributed Systems Management Framework standards initiative, in addition to announcing its support for the Open Software Foundation's Distributed Computing Environment/Distributed Management Environment framework. "One important thing Unisys has been doing is being a leading implementor of industry standards," Kirzner said.

Glen W. McLean, manager of data processing at American Commercial Barge Line in Jeffersonville, Ind., agreed. "The more standards-oriented [the Unix] area becomes, the easier it's going to become to use multiple solutions," said McLean, whose shop uses a network of U 6000 servers to schedule its fleet.

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Miller finds Paradox brew tasty

Can Division beta-tests Paradox for Windows to track materials orders

By Christopher Lindquist

Reynolds Metals Co. wanted to provide one of its customers, Miller Brewing Co.'s Can Division, with a system that would let it more closely monitor orders for raw materials as part of an expanded quality management program.

But there were two requirements. Miller, based in Reidsville, N.C., had established Borland International, Inc.'s Paradox 3.5 for DOS as a database platform, and the system needed to keep in mind that both Miller and Reynolds were moving toward the Microsoft Corp. Windows environment. That did not leave many choices, according to Brent Kannady, team leader at Reynolds' Mill Products Division, and Rick Losco, team lead supporting manufacturing systems. They soon found themselves on the beta-test program for Borland's recently released Paradox for Windows.

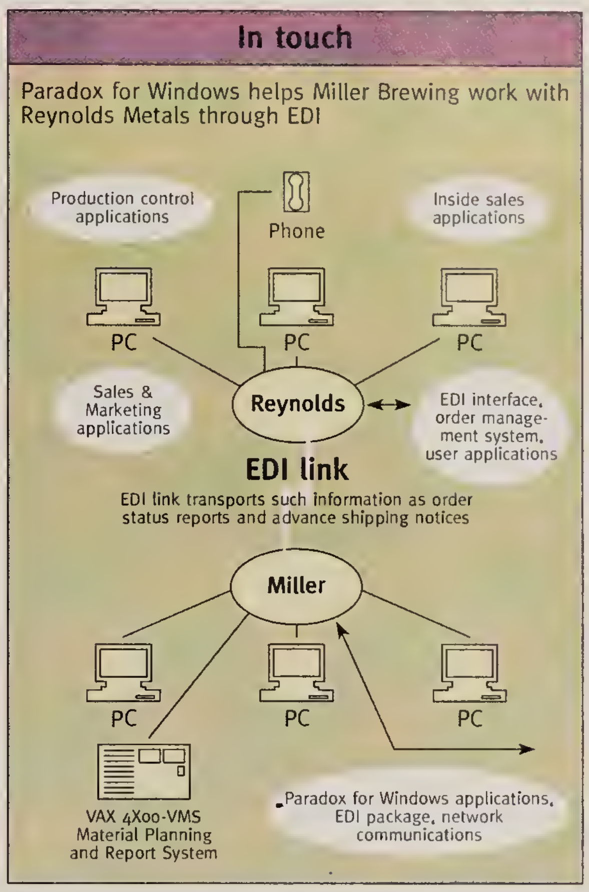
The need for the application came about when Miller asked Reynolds, based in Richmond, Va., to help reduce its inventory of aluminum coils used at the can manufacturing plants and monitor the quality of the aluminum it received. The result was a Paradox for Windows application that let Miller perform tasks including tracking remote, in-transit and in-house inventories; materials forecasting and ordering; and quality control monitoring.

The entire project was completed over the course of six or seven months by Losco, Kannady and two part-time programmers brought in to help with the electronic data interchange (EDI) link to the application. Additional help came from Miller's information systems department and the Can Division.

The most important feature the project team found in Paradox for Windows was its ability to efficiently create and modify screens and forms. Kannady would have users critique an interface. Then, because of the product's development tools, he could tell them, "Go back to your desk and it'll be ready in five minutes."

In touch

Paradox for Windows helps Miller Brewing work with Reynolds Metals through EDI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Paradox for Windows applications, EDI package, network communications

CW Chart: Michael Siggins

The tools in Paradox for Windows include Object Inspectors that let the developer point at an object and click the right mouse button to bring up a menu of properties that can be modified. The product also includes point-and-click relational table linking.

"We normally spend 20% of our time getting specifications and 80% of our time coding," Kannady said. However, with tools such as those in Paradox for Windows, he said he foresees a time when he will spend 80% of his time being "a good business analyst," with minimal time spent coding.

Another important feature in Paradox for Windows was the ObjectPAL language. ObjectPAL, despite its name, is not the PAL found in Paradox for DOS, and team members said there is a learning curve. The team spent five or six weeks adjusting to the event-driven programming methods used in ObjectPAL. Having crossed that hurdle, however, the power of ObjectPAL became more apparent.

Indeed, one of the part-time programmers who had worked with mainframes told Kannady it appeared ObjectPAL had the flexibility and robustness to do everything common languages can do.

The language had sufficient power to write an interface to the EDI translation software and also the flexibility to let the team produce query screens that let users move through relevant data without being exposed directly to Paradox for Windows' Query By Example feature.

The application is running on only two systems at Miller because the team did not want to distribute it until the final version of Paradox for Windows shipped. Plans include moving it to the shop floor so managers can input and view data on aluminum shipments directly.

Kannady said the team is convinced that because it has overcome the learning curve on ObjectPAL, the project could be completed in half the time it took originally. And even in taking six or seven months, Kannady said, the project took about one-fourth as long to finish as similar projects he had seen put together in more traditional languages.

Paradox for Windows is available now for a list price of $139.95.

Speed vs. power

The Reynolds development team's only real concern with the Paradox database was somewhat slow performance. Most development was done on Intel Corp. I486SX machines with 8M bytes of memory. The machines were expanded to 8M bytes after 4M bytes proved too slow. To be fair, team leader Brent Kannady said, the project was originally built with earlier beta-test versions, and each new version showed incremental performance improvements. But speed was a small price to pay for the power of the product. "The positives really outweigh the negatives," he said.

Distributed objects take step forward

By Garry Ray

The movement toward distributed object computing took another step forward with separate announcements made last week by Hewlett-Packard Co. and Digital Equipment Corp. The companies — both leading contributors to the Object Management Group's (OMG) Common Object Request Broker Architecture (Corba) — made the announcements in conjunction with the Object World conference in Boston.

Corba is an industry-standard mechanism that lets object-oriented tools and applications be integrated across a variety of operating systems, networks and platforms.

An HP spokeswoman said the company had completed a SmallTalk-based application development environment that uses the Corba framework and SmallTalk programming language. Tentatively dubbed HP Distributed SmallTalk, the environment is based on the OMG's Corba framework and ParcPlace Systems, Inc.'s SmallTalk language and VisualWorks development tools, according to HP officials. It will not be released as a product until later this year.

"The environment was developed for internal testing and prototyping," said Mike Matthews, product marketing manager of HP's distributed computing program in Cupertino, Calif. "If we decide it's of the right quality, we might announce as a product later."

But Matthews said the environment had already answered many of HP's questions about the OMG's spec. Using it, he said, HP's distributed computing group had gained practice developing SmallTalk objects within the Corba environment, establishing interfaces among those objects and testing the object services defined by the OMG. "Having the core technology gave us a realistic picture of how things could go wrong in the evolving OMG standards," he said.

DEC also announced that its Application Control Architecture (ACA) Services will be made available for four new operating systems: IBM's AIX, HP's HP/UX, Apple Computer Inc.'s Macintosh System 7 and DEC's OpenVMS AXP. ACA Services — an object request broker that allows software integration across disparate platforms — had been available for DEC's OpenVAX/VMS and Ultrix, Sun Microsystems, Inc.'s SPARCstations and Microsoft Corp.'s Windows.

A foundation architecture for Corba, ACA Services is also a foundation for Hyperdesk Corp.'s HP-DOMS, which will be integrated with Novell, Inc.'s NetWare later this year.

Commentary

Scott H. Koehler

The scoop on OOP

Despite its popularity, the large-scale use of object-oriented technology is still far from common, particularly in applications that address a company's "business logic."

One of the problems for managers is the choice of an appropriate object-oriented development language. To make that choice clearer, here is an overview of the options that are currently available.

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Koehler

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The tool route: The new visual programming tools are often seen as an easy way to introduce personnel to new technologies, as the implementation details are hidden. Unfortunately, these tools can be used as a substitute for learning the object paradigm. And in business logic, they fall short in key areas.

Tool use does not promote the paradigm shift necessary for thinking about enterprisewide objects and their interactions. In many instances, tool-produced applications are recoded for production use, resulting in additional cost. Tools are often limited in functionality.

Tools can be appropriate for part of the solution, such as the user interface, but implementation of the business logic requires use of an object-oriented programming (OOP) language.

Languages: The migration to object technology is not really a language or syntax issue. It is a fundamental change in the way software is developed. To enact that change in the minds of experienced software developers requires a radical break from past methods.

Object Cobol: The primary reasons for support of Object Cobol are the presence of Cobol-based legacy systems and personnel skill sets. Clearly, these are big considerations, but this path will not yield the full benefits of object technology. Providing a familiar syntax and environment will likely encourage program designs and implementations that resemble prior solutions.

Also, Object Cobol is unlikely to be available on multiple platforms soon, prolonging your transition.

SmallTalk: Proponents of SmallTalk say it is a "pure" OOP language. Thus, it is better at forcing the dreaded paradigm shift and is appropriate for many applications. The knock on SmallTalk is that while it is a good prototyping tool, it is inappropriate for large, multideveloper projects or production version systems.

But SmallTalk can be used as a training vehicle to radically alter a developer's surroundings. Even so, it probably won't emerge as the winner in the corporate IS market. The reasons why SmallTalk will not be the winner are precisely the reasons why C++ will be.

C++: Here are some of its benefits:

- While it is not a pure OOP language, C++ is sufficiently different from Cobol to discourage familiar solutions.
- A large, expanding user community ensures increased availability of supporting tools and environments, class libraries, publications, expositions and trained resources.
- There are many C++ compilers on multiple platforms, and the language is compatible with all C-supported architectures via the cfront translator.
- C++ provides a migration path from procedural-based development.
- C++ is efficient and has proven industrial strength.
- C++ offers a good balance between control and productivity.
- C++ is "open," thereby providing an environment that can readily interface with modules written in other languages.

The main drawback to C++ is that it is seen as too low-level and complicated for the average corporate IS programmer. There is some truth to this argument. It is unlikely that you will be able to convert your entire staff into C++ gurus — nor should you want to.

Fortunately, there is a middle ground. One approach is to build an infrastructural layer that insulates the application code from the low-level aspects of the language. Building the infrastructure is not a trivial exercise, however, and it requires the appropriate up-front commitment.

Also, it is unnecessary to use all of the features available in C++. For example, operator overloading is not necessary to achieve desired functionality.

The choice facing corporate IS management is a difficult one. For many, continuation of the present method of software development is undesirable. Object technology offers the promise of improving this situation, but the path to harnessing this new technology is unclear.

Although no option is perfect, C++ offers the best longer term solution for the corporate IS community. Waiting offers no solution.

Koehler is a principal at Koehler Consulting in Holliston, Mass.

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Computer-aided software engineering

Caseworks, Inc. has announced CASE:PM for CTOS.

The product is a development tool that assists in the construction of graphical user interfaces for Unisys Corp. CTOS user interface applications. CASE:PM for CTOS has the ability to produce the source code needed for an interface, once an interface design is finished. Generated code can be modified to a chosen functionality, and when built, CASE:PM for CTOS applications use the CTOS Microsoft Corp. C 6.1 compiler.

CASE:PM for CTOS costs $2,995 and can be purchased through Unisys or Caseworks.

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Application development tools

Software Control Corp. has released Hypersource Maintenance.

The product is a static analysis tool designed to reduce the research time spent maintaining Cobol programs. Research tools are provided to simplify the complex interrelationships within the Cobol program and comprehensive analysis capabilities for data, logic and error-related problem finding. Hypersource's analysis engine runs on either the PC or mainframe.

Hypersource costs $1,375 per workstation. For the mainframe analysis version, it costs $20,000, plus an additional $375 per workstation.

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California Software Products, Inc. has introduced Release 1.3 of Baby 4XX, its RPG 400 software system.

Improved debugging facilities and enhanced physical and logical file support with a JOIN file capability are a few of the highlights provided, according to the company.

The product was designed to downsize IBM's Application System/400 native code from a midrange to a PC, enabling it to be recompiled and used in single-user or multiuser mode or on a network. Running under OS/2, Baby 4XX offers the ability to integrate AS/400 applications with Microsoft Corp.'s Windows, DOS and OS/2 software.

Prices start at $3,500 for an entry-level Development System and $750 for an entry-level Runtime Support System.

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Compilers

Financial Technologies, Inc. has announced VS/Presto-400.

VS/Presto-400 is said to ease the migration of the Wang/VS applications to the IBM Application System/400. The product consists of three components: a Wang/VS Cobol compiler designed for the AS/400 that lets Wang Cobol code run on the AS/400 by recompiling, which eliminates the need for any conversion of the code; a Procedure tool that converts 90% of Wang Procedures to the AS/400 Control Language; and Wang-to-AS/400 data file conversion.

VS/Presto-400 prices begin at $10,000.

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The Computer Bowl

Welcome to THE UNKNOWN ZONE

Don't be afraid of question marks in big system development projects. Instead, court and conquer chaos. Here's how.

By Gary H. Anthes

At first glance, the systems development schedules taped to the walls at the U.S. Patent and Trademark Office are just like those found anywhere in the Washington, D.C., area. But there is a significant difference: These are studded with decision points missing from the project plans of most conventionally managed development efforts.

KATHERINE LAMBERT

Thomas Giammo *of the U.S. Patent and Trademark Office: Exploding the 'myth of certainty' by carefully documenting the unknown*

The decision points, which explicitly state when various questions must be answered and issues resolved, explode "the myth of certainty," says Thomas Giammo, assistant commissioner for information systems.

Large, complex development efforts often flop, Giammo says, because project managers believe — or are forced by organizational cultures to behave as if they believe — that uncertainty can be wrung out of a project at the beginning by doing very careful requirements analyses. "I believe that to be fundamentally erroneous," he says.

Giammo is the driving force behind an emerging body of principles and practices he calls Managed Evolutionary Development (MED).

In the gospel according to MED , if you are embarking on a large development project, you need not, and indeed cannot, resolve all uncertainties and eliminate all risks up front.

Rather, by explicitly recognizing and documenting the unknowns, it is possible to proceed safely with the project while the uncertainties get resolved in a carefully managed way.

Denying risks

Rona Stillman, chief scientist at the U.S. General Accounting Office's Information Management and Technology Division, says she has not yet studied the MED methodology. But she says Giammo has put his finger on a fundamental flaw in the way most complex projects are managed.

"On very large projects there is a tendency to deny that risks exist," Stillman says.

"There is a pretense at the front end that you can budget accurately when you cannot, that you can schedule accurately when you cannot. [Developers] treat it as if it is a turn-the-crank task; if you just do it carefully, everything will be OK," she says.

Stillman says the belief stems in part from the erroneous notion that management techniques and tools that work well on small projects also work on large ones. "They do not scale up," she asserts.

Instead, Stillman advises project managers to carefully identify uncertainties up front but not to fool themselves into thinking they can resolve them all right away. "You should say, 'I don't know a lot about this, but here's what I'm going to do to find out and this is when I'm going to do it. Then I'll come back and tell you what the project really looks like.' "

True, there is a potential problem with that approach, Stillman concedes. "In many organizations, the program manager who did that would be punished. He'd lose his project in favor of someone who claimed to have all the answers but who had in fact 'invented' them."

But Giammo argues that that risk, like other project risks, can be managed by MED.

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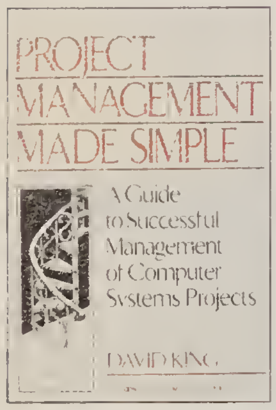
Project helpers – Page 56.

Intelligence Files – Page 57.

Project helpers

These new books can help keep your software projects on track.



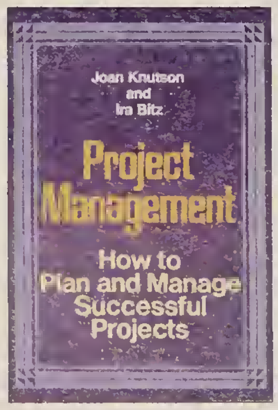
PROJECT MANAGEMENT MADE SIMPLE

A Guide to Successful Management of Computer Systems Projects

DAVID KING

Yourdon Press
(201) 592-2000
112 pages
1992
$30

Hands-on cookbook walks the prospective project manager through a step-by-step analysis of a software development project, as well as providing guidelines to managing a project team successfully. Includes checklists, progress reports, questions and answers.



Joan Knutson and Ira Bitz

Project Management

How to Plan and Manage Successful Projects

Amacom Books
(800) 538-4761
198 pages
1991
$49.95

General approach covers range from hard technical skills to soft political issues. Readers will learn how to plan a project using five-step models, as well as how to manage schedules, costs and resources and deal with the inevitable changes a large-scale project entails.

Welcome to the unknown zone

CONTINUED FROM PAGE 55

"It allows users, builders and management to all agree that risks are acceptable rather than lying to each other that there are no risks," Giammo says. "Your management will allow you to go forward with uncertainty if they feel you have your arms around it, if you have an explicit plan to deal with it."

Lessons from 'shambles'

Giammo is an ideal crusader for a better way of handling systems development. In more than 30 years as an IS professional, most of it in the federal government, he has seen more than a few systems development fiascos.

One of the earliest was a U.S. Air Force logistics system that crashed and burned in the 1970s after the Air Force had spent a whopping half-billion dollars on it.

"They realized they had to do a process redesign, and they put together a massive team to do it," Giammo recalls. "But it was so huge they couldn't think it through. They couldn't get it started."

The first attempt to overhaul the systems at the Social Security Administration, which began in 1976, fared no better, Giammo says.

"My first task when I came in in 1979 was to kill the project. They had spent millions of dollars and produced nothing. They could never drive it down to a level of detail needed to go forward," he says.

To the rescue

In 1988, Giammo was tapped by the deputy secretary of commerce to rescue a $289-million effort to automate operations at the U.S. Patent and Trademark Office.

"It was a genuine collapse of a very large project, a recognizable shambles," he says. "The problem was it was being managed in a linear fashion. We locked things in that shouldn't have been, and in lockstep we kept producing the wrong things."

"I began to see patterns in these projects," Giammo says. "I thought, 'by and large these are not stupid or slothful people. There must be something stopping them from doing what is expected of them.'"

The fundamental problem, Giammo concludes, was that these huge projects were being managed with techniques more appropriate to an earlier era in which discrete, relatively simple processes, such as payroll or personnel, were automated.

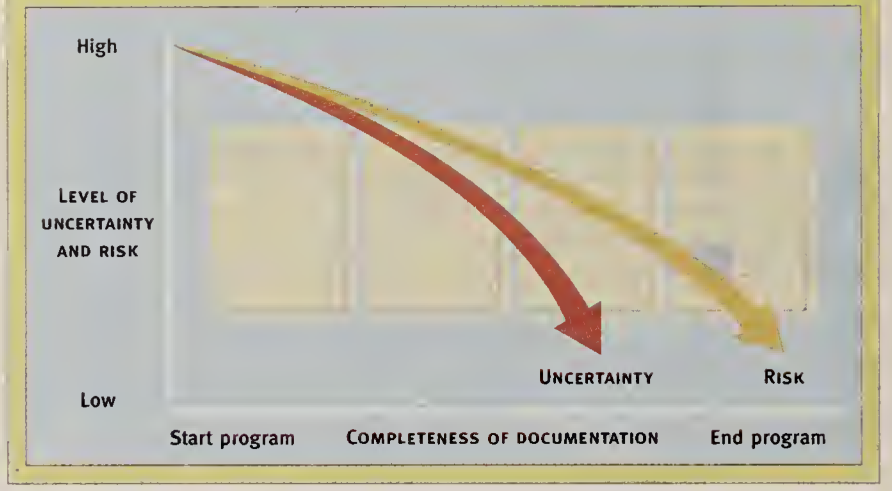
"Now, we are moving up the org chart, we are integrating at higher and higher levels," Giammo says, "to get that degree of certainty implicit in the traditional development methodologies."

Formal plan needed

Yet as compelling as MED's concepts are, Giammo has learned they are not enough; there must be a written framework for implementing them.

Good documentation equals peace

As documentation becomes more complete toward a project's end, uncertainty and risk diminish



Source: U.S. Patent Office

CW Chart: Tom Monahan

"I tried to implement this at [the patent office] two years ago by word of mouth," he says.

"It didn't work. I realized it had to be formalized, written down and taught as a methodology," Giammo adds.

MED was recently codified in a 2-in.-thick draft document by the Software Productivity Consortium in Herndon, Va., and The Mitre Corp. in McLean, Va., under Giammo's direction and drawing on previous work by those organizations.

Rockwell International Corp., a member of the consortium, uses a similar methodology in developing complex communications software. Art Gemmer, a software process engineer at Rockwell, says the key to the method lies in formal, organizationwide methods for identifying and analyzing risks.

"In the past, it was up to the project leaders to identify risk based on their experience and perception of the situation, so you were really at the mercy of whatever their experiences and perceptions were," he says. "And the alligator that was closest to you was the one you worried about the most. You didn't look at the other gators in the swamp, even though they were bigger and meaner."

Growing interest

Although Giammo seems to have pushed the concepts further than anyone else in the government, his is hardly a voice crying in the wilderness.

Testifying last month at a Senate hearing on "high-risk areas" in government management, U.S. Comptroller General Charles A. Bowsher said, "The demand for certainty in the system development process leads project managers to downplay risks and problems, resulting in missed benefits and misspent money."

He called on federal agencies and Congress to experiment with new ways of deploying information technology.

Plus, a new "Life Cycle Management Guideline" was published in December by the U.S. Department of Commerce's Office of Information Resources Management.

The new guideline supplements the "traditional approach" with an "evolutionary approach" to life-cycle systems management. According to the guide, the traditional method is OK for dealing with problems of complexity but not of uncertainty.

Giammo has not been impressed with the federal government's campaign to move away from "grand-design" megaprojects by breaking them into smaller, less risky chunks.

"Obviously things that are big and complicated are hard to do," Giammo says. "The alternative of breaking them down into tiny chips and doing them individually is easier to manage, but what have you got? A lot of random things happening." •

Executive Track

Robert Hans, head of information systems at **Federal Home Loan Bank of New York**, has been promoted to the position of senior vice president at the Manhattan-based financial institution. For Hans, 43, the new title caps two decades of service to the bank.

IS also proved itself a fruitful career path for the bank's new chief operating officer. Although he worked his way up through the bank's executive ranks in economics and finance, **Harold Fletcher**, who was recently named executive vice president and COO, joined Federal Home Loan in 1973 as a night computer operator.

Bruce L. Haddan has been named assistant vice president of systems at **Norfolk Southern Corp.**'s Transportation Logistics Division. Haddan, who joined the Norfolk, Va.-based railroad company in 1975, is headquartered in Fort Wayne, Ind.

Colin Laughlin is the new assistant vice president of computer information services at Canada's **North West Trust Co.** The Edmonton, Alberta-based financial institution is currently in the midst of developing its own PC-based client/server banking system.

Leading the charge will be among the highest priorities for Laughlin, who formerly served as systems development manager at Shell South Africa.

In Herndon, Va., **The National Automated Clearing House Association** has elected **Sam S. Cerverizzo** as the chairman of the board of directors.

Cerverizzo has served on the board for four years as representative of Chemical Banking Corp., where he is currently a senior vice president and the business manager of collection and disbursement services for the bank's Geoserve cash management division.

He is responsible for product management, operations, customer service and technology that serves some 5,000 clients.

Cerverizzo will start his two-year stint at the head of the board in June, replacing outgoing Chairman **Michael W. Paulette**.

Have you, or a colleague in the information systems field, recently been promoted? *Computerworld* would like to share the news with the rest of the IS community. Please contact Senior Editor Nell Margolis at 1-800-343-6474 to pass the news along.

Technical briefing

How MED works . . .

Managed Evolutionary Development (MED) is intended to overcome some of the shortcomings inherent in conventional life-cycle development models. In MED, all system documentation is written in draft form at the beginning of the project. Uncertainties, which take the form of gaps in the documents, are carefully noted and recorded in a process called "deficiency analysis." The same documentation is reviewed periodically and used for the whole project.

The project is allowed to proceed as long as deficiencies do not prevent the formulation of rough cost estimates and schedules. Draft documentation is updated as uncertainties are resolved and as pieces of the system are developed.

Project management specialists lay out a blueprint for resolving the deficiencies, taking special care to note when each must be resolved. All deficiency correction efforts must be explicitly scheduled and staffed, and no part of the system may be developed until only "tactical" uncertainties, such as report format details, remain.

A "system boundaries document," one of five basic documents that define the organization's "target vision," receives special emphasis in MED. It says what the system will and will not do and is intended to curtail project killers such as "gold plating" and "requirements creep."

The document can be likened to the U.S. Constitution, the overarching arbiter of all that is and is not permitted. It can be used by either user or development organizations to enforce adherence to project scope. Any significant changes must be approved by the highest levels of management. — *Gary H. Anthes*

. . . compared with other approaches

MED is an evolutionary step up from several popular approaches to life-cycle development.

Many models are variations of the so-called "waterfall" approach. Under this model, projects are divided into discrete, linear phases, with work in process flowing from one phase to the next. The model assumes that all uncertainties in one phase are resolved before the next is begun.

Critics, however, say this is inappropriate in projects with high degrees of complexity, risk and uncertainty. "The waterfall model is risk-averse," says Rona Stillman, a computer scientist at the U.S. General Accounting Office. "It encourages unrealistic cost and schedule estimates and the appearance of problem-free development."

In contrast, MED assumes a project that spans organizational boundaries in an information-intensive organization. Its successful use requires the organization to incorporate business-process re-engineering — a task omitted from most conventional development models.

Supporters say approaches that attempt to address risk as an integral part of the methodology — such as the so-called "spiral model" — either have no clearly defined method for resolving risk or fail to establish a clear, fixed system boundary.

"MED is an attempt to combine the best of what the spiral model has and the best of the waterfall approach," says Paul Gonzalez, a department head at The Mitre Corp. "People have thought of all of these things before, but it is the first time that it's been codified into a unified approach."

— *Gary H. Anthes*

Conferences

The Kerzner Approach to Project Management: A systems approach to planning, scheduling and controlling
April 7-8, Boston
(800) 325-1533; (212) 909-0577

This cross-disciplinary conference presents front-line lessons from major corporations. The focus is on getting line managers, project managers and senior managers to work together.

The two-day curriculum covers organizational structures, building teams, defining authority, leadership, concurrent engineering, communicating with managers and customers, costing and more.

Instructor Harold Kerzner is head of the Project Management/Systems Management and Research Center at Baldwin-Wallace College.

Software Project Management
The Center for Software Development
March 9-12, July 26-29, Boston
(800) 733-3593, ext. 255

This course covers all aspects of project management in software development. The emphasis is on mastering tools and techniques to produce accurate, reliable project plans. It is aimed at managers of large projects or multiple small projects.

The instructor, William R. Duncan, is director of standards at the Project Management Institute.

Also of interest are the following:

The Software Development Exhibition and Conference '93. Santa Clara, Calif., Feb. 22-26. Call (214) 245-6012.

Planning for Integrated Information Systems. Orlando, Fla., Feb. 24-25. Call (301) 762-1288.

First Workshop on Object-Oriented Design '93. Snowbird, Utah, March 8-10. Call (414) 789-5258.

The Ninth International Conference on Engineering Information Systems. Fort Lauderdale, Fla., March 24-26. Call (617) 232-8080.

Intelligence Files

Graphic evidence

The legal profession is on the brink of a major evolution in courtroom evidence: the routine use of computer graphics as an instrument of persuasion. The value of demonstrative evidence to help jurors understand complex issues has long been recognized by experienced trial lawyers, but until recently it has been primarily limited to hand-drawn charts, graphs and diagrams. With the cost and complexity of computer graphics plummeting, presentations that once took months to create can now be done in days or hours.

Source: *ABA Journal*, December 1992, Roy Krieger, author.

Hacking from abroad

During the Persian Gulf war, hackers from the Netherlands were able to penetrate U.S. Department of Defense computers. Although the hackers were identified and their intrusions violated U.S. law, they were not prosecuted because the Netherlands have no laws against computer hacking.

The stark lesson for businesses and government agencies is that domestic laws neither deter nor punish international hackers. Companies should cast aside the foolish notion that government action will protect them from foreign hackers and concentrate on developing and maintaining operational security.

Source: "Hacking from Abroad," a draft paper by Joseph Williams at Colorado State University.

R$_X$ for health care costs

Doctors who use computers instead of paper to order drugs and tests for hospital patients significantly reduce their patients' medical costs, researchers at Indiana University say.

In a study of physicans' treatment of roughly 5,000 patients at an Indianapolis hospital, researchers found that charges for patients treated by computer-using doctors were nearly 13% lower per hospital admission than charges for patients treated by doctors who used manual billing techniques. The findings bolster claims that more aggressive use of computers can reduce waste and inefficiency in the health care system.

Source: "Computers helping doctors match care with costs can lower bills, study says," *The Wall Street Journal*, Jan. 20, 1993. Ron Winslow, author.

Bureaucracy busting

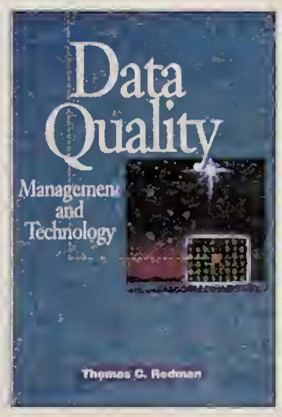
One reason corporate bureaucracies blossom is that, in the name of efficiency, companies create centralized departments to handle tasks such as photocopying and fleet management. The problem is that these departments focus on their own narrow function, regardless of how it affects the total business mission or customers.

To bust the bureaucracy, disband these functional departments and redeploy the people into line units where they will be mission-driven. Some units to consider for dispersal: purchasing, personnel, fleet, copying, training and information systems.

Source: *Busting Bureaucracy* by Kenneth Johnston, published by Business One Irwin, 1992.

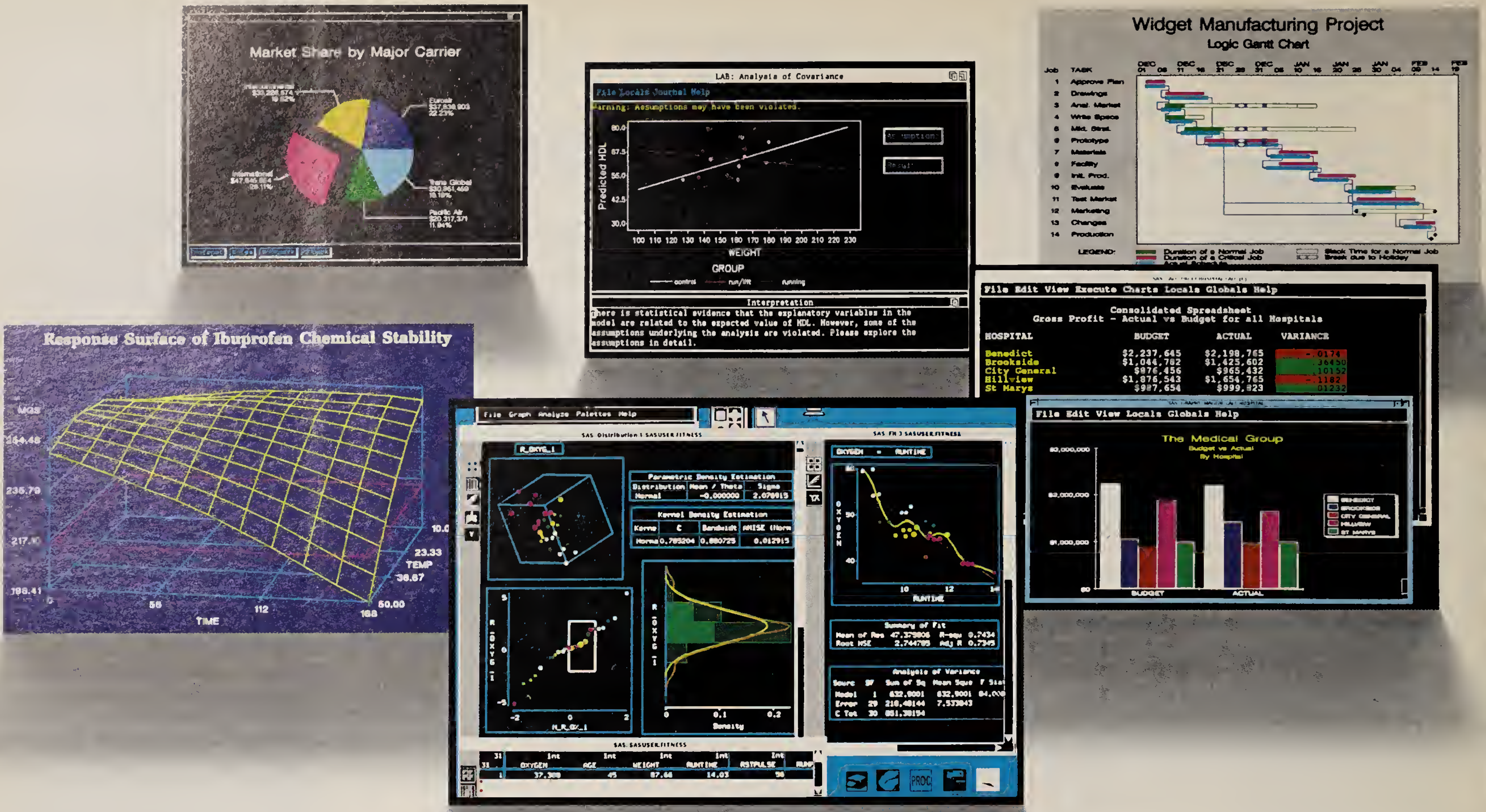
Project helpers (continued)

John Wiley & Sons, Inc.
(212) 850-6000
287 pages
1993
$42.95
Applies total quality management principles to software; provides seven basic tools, including checksheet, Pareto charts, control charts.



Bantam Books
(212) 765-6500
320 pages
1992
$49.95
An invaluable guide to maintaining high data quality *after* systems are built.

Dorset House Publishing
(212) 620-4053
226 pages
1991
$18.95
Not strictly hands-on but raises provocative questions about the long-term effects of software development, including possible payoffs and pitfalls.


Market Share by Major Carrier
Eurasia
Trans Global
Pacific Air
International
Widget Manufacturing Project
Logic Gantt Chart
Approve Plan
Drawings
Anal. Market
Write Specs
Mkt. Strat.
Prototype
Materials
Facility
Init. Prod.
Evaluate
Test Market
Marketing
Changes
Production
LEGEND:
Duration of a Normal Job
Duration of a Critical Job
Slack Time for a Normal Job
Break due to Holiday
LAB: Analysis of Covariance
File Locals Journal Help
Warning: Assumptions may have been violated.
Predicted HDL
WEIGHT
GROUP
control
run/lift
running
Response Surface of Ibuprofen Chemical Stability
TIME
TEMP
File Edit View Execute Charts Locals Globals Help
File Graph Analyze Palettes Help
SAS Distribution : SASUSER.FITNESS
SAS Fit : SASUSER.FITNESS
Parametric Density Estimation
Kernel Density Estimation
Summary of Fit
Analysis of Variance
File Edit View Locals Globals Help
The Medical Group
Budget vs Actual
By Hospital
BUDGET
ACTUAL

Interpretation

There is statistical evidence that the explanatory variables in the model are related to the expected value of HDL. However, some of the assumptions underlying the analysis are violated. Please explore the assumptions in detail.

Consolidated Spreadsheet
Gross Profit - Actual vs Budget for all Hospitals

HOSPITAL	BUDGET	ACTUAL	VARIANCE
Benedict	$2,237,645	$2,198,765	-.0174
Brookside	$1,044,782	$1,425,602	.36450
City General	$876,456	$965,432	.10152
Hillview	$1,876,543	$1,654,765	-.1182
St Marys	$987,654	$999,823	.01232

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The CW Guide

RDBMS for *Client/Server:* They don't quite measure up

MICHAEL KLEIN

By Richard Finkelstein

For the most part, relational database servers have done a good job of supporting client/server applications. Many organizations have migrated mainframe and network applications to client/server environments, and some have even rightsized mission-critical applications with great success. Chevron Canada, for example, replaced its mission-critical mainframe systems with PC-based client/server applications.

Most typical, though, are organizations deploying small departmental systems with low transaction volumes or decision support systems that read the database but do not update it. Applications supporting a large number of users or ones handling a large volume of transactions are more difficult to implement; consequently, there are very few real-life cases where this has occurred.

All in all, experiences with this environment have been varied, and not all attempts have achieved their initial goals.

One important reason for this is the quality and reliability of database server products. Vendors, in their rush to beat the competition to the market, frequently release products before they are properly tested. It is, unfortunately, all too common for a vendor to promise a product that either never materializes (evaporated-ware?) or is many years late. This plays havoc with project schedules.

Relational database management system servers are not as mature as mainframe RDBMSs, which have superior monitoring, auditing and performance-tuning tools. Transaction processing (TP) monitors such as IBM's CICS are commonly used with mainframe RDBMSs for better transaction control and recovery. On the other hand, TP monitors are rarely used on minis and PCs, although recent interest in TP monitors may change this situation.

Excessively high user expectations, often fueled by vendor hype, have caused some organizations to embark on large and critical client/server projects before the organization has been sufficiently prepared for these types of applications. The cost of deployment is frequently way underestimated. Part of this cost is the unpredictability and instability of client/server software.

But it's not all the fault of the databases. PC networks contribute to the chronic instability of this environment. The fact that thousands of component parts are supplied by hundreds of vendors leads to unpredictable software or hardware problems, which are almost impossible to trace and resolve. Another reason is the unreliable operating system platforms such as Microsoft Corp.'s Windows and Novell, Inc.'s NetWare, which were designed without proper application protection. System crashes on these platforms are frequent and inevitable.

Client/server development and RDBMS servers are still in an embryonic stage. The situation is analogous to the transition that took place when organizations moved from batch-oriented to on-line applications in the '70s and '80s. While many in the 1970s predicted swift movement from sequential batch files to on-line DBMSs, it actually took more than a decade before a significant number of applications were running on-line.

Migration to client/server will also take time, but now is the time to start. •

INSIDE:

RDBMSs for client/server configurations have their weaknesses. Page 60. But the major database vendors are adding essential features to master the challenges of this environment. Page 63. There are also major differences among available RDBMSs and the front-end tools that work with them. Pages 60 and 64.

Despite these issues, users surveyed in Buyers' Scorecard give high marks to the market-leading Unix RDBMS they have installed. Page 62. Early users of Gupta Corp.'s SQLBase 5.1 also say the product meets their expectations. Page 65.

Finkelstein is president of Performance Computing, Inc., a DBMS consulting firm in Chicago.

RDBMS for Client/Server

No two are alike

As database servers become more varied, users would do well to check out several requirements

By Richard Finkelstein

Some people say database servers have become so much alike, they have become "commodities." Actually, nothing could be further from the truth. The manner in which a database server implements a set of functions can make a huge difference in the cost and time requirements for a client/server project.

Database servers are actually becoming *more* dissimilar, as competitive pressures force relational database management systems vendors to try adding more advanced features into their products. Following are some major purchase requirements that you should check into.

Performance

IT IS VERY DIFFICULT to accurately judge the performance of an RDBMS in a client/server environment because there are so many variables. The standard Transaction Processing Council (TPC) benchmarks are too simple to provide much help.

With the cooperation of hardware vendors, RDBMS vendors have learned to tune their engines so that they record high benchmarks of hundreds of transactions per second, when actually they can barely achieve a fraction of this number.

So how does one judge RDBMS performance? One way is to talk to other users who have implemented applications similar to the ones you hope to build. Some database servers have excellent resource utilization so that they can handle a large number of users or complex transactions. Sybase, Inc. pioneered the concept of a single-process multithreaded architecture, which appears to make the best use of available memory and CPU resources. The same method has been adopted by The ASK Group, Inc. with Ingres and Gupta Corp. with SQLBase.

RDBMS AND CLIENT/SERVER

OF 200 RESPONDENTS, MOST ARE AT LEAST EXPERIMENTING WITH THEIR RDBMS IN A CLIENT/SERVER ENVIRONMENT

YES:	57%
NO:	41%
DON'T KNOW:	2%

(PERCENT OF RESPONDENTS)

Source: Buyers' Scorecard survey

Other RDBMSs are more resource-hungry. Oracle Corp., for instance, uses a process/user architecture that tends to use more resources than the single process/multithreaded architecture. Oracle 7 is supposed to address this problem with "shared SQL" capabilities and a new transaction dispatcher mechanism. But the new dispatcher architecture will be disabled until SQLnet 2.0 is released for Oracle.

Another way to judge performance is to run a limited benchmark using a prototype. This does not always provide accurate predictions of real-life behavior, but it will be of a magnitude better than the vendor-supplied TPC numbers.

Because benchmarks cannot simulate real-life work loads, it is best to give yourself a nice margin of error by halving the prototype benchmark and using that number as the expected level of performance. When running the benchmark, make sure the network is reasonably exercised because overhead often becomes the performance bottleneck.

Reliability

THE RELIABILITY of database servers varies from platform to platform, depending on how important a particular platform is to the vendor. When a vendor claims to support dozens of platforms, many of these platforms are likely running older and poorly maintained versions of the RDBMS.

Under OS/2, Microsoft Corp./Sybase's SQL Server still uses a 16-bit architecture and is at Release Level 4.2, even though on many of its Unix platforms, Sybase has 32-bit versions at Release Level 4.9.

Similarly, Oracle announced Oracle 7 in 1989 yet only last month released part of it on VAX/VMS. It still has not announced general availability dates for Oracle 7 on any of its other platforms. ASK and Informix Corp. are selling ancient PC versions of their databases.

Development productivity

ONE WAY TO SPEED application development is to use specialized software for building different parts of a system. Sybase and Oracle have the largest number of third-party front-end tools, but database servers such as Borland International, Inc.'s Interbase and Empress Software, Inc.'s Empress have very strong tools for developing applications that manage complex data.

ASK's Ingres database sports a highly integrated tool set that includes a graphical user interface development environment that is portable across many platforms. Progress Software Corp.'s Progress is another database server with a highly integrated tool set that is favored by many value-added resellers because of its reliability.

Each server has a unique set of application interface functions. SQL Server and Gupta's SQLBase support backward and forward row fetches. Oracle has a special SQL function that can be used to decode table values and explode tables for assembly/subassembly types of problems.

For its part, XDB Systems, Inc.'s XDB closely replicates IBM DB2's SQL syntax and behavior so that programmers used to building DB2 applications will be able to easily transfer their knowledge to XDB.

Locking technique

THERE ARE MANY subtle differences between database servers that greatly impact application design. Both Sybase and Oracle use a record-locking scheme that requires users to check for changes before updating records. This user-controlled "optimistic" locking method is complex; done improperly, it could lead to a corrupted database.

That is why database servers such as Interbase implement RDBMS-controlled optimistic locking, which guarantees that no transaction will overlay the updates of another.

Other products, such as Informix, Ingres and IBM's Database Manager, implement a more traditional, "pessimistic" locking method, where records are locked as soon as they are retrieved.

Gupta's SQLBase provides users with the option to use user-controlled optimistic locking or RDBMS-controlled pessimistic locking.

• • • • • • • •

EACH DATABASE SERVER has its own individual characteristics that make it more or less suitable for a given application. Even if two look very much alike, there are often major differences in the way features have been implemented.

It is therefore very important to talk to current users to better understand the nuances of a given feature implementation. Understand the database server before you make monetary commitments. •

What servers need

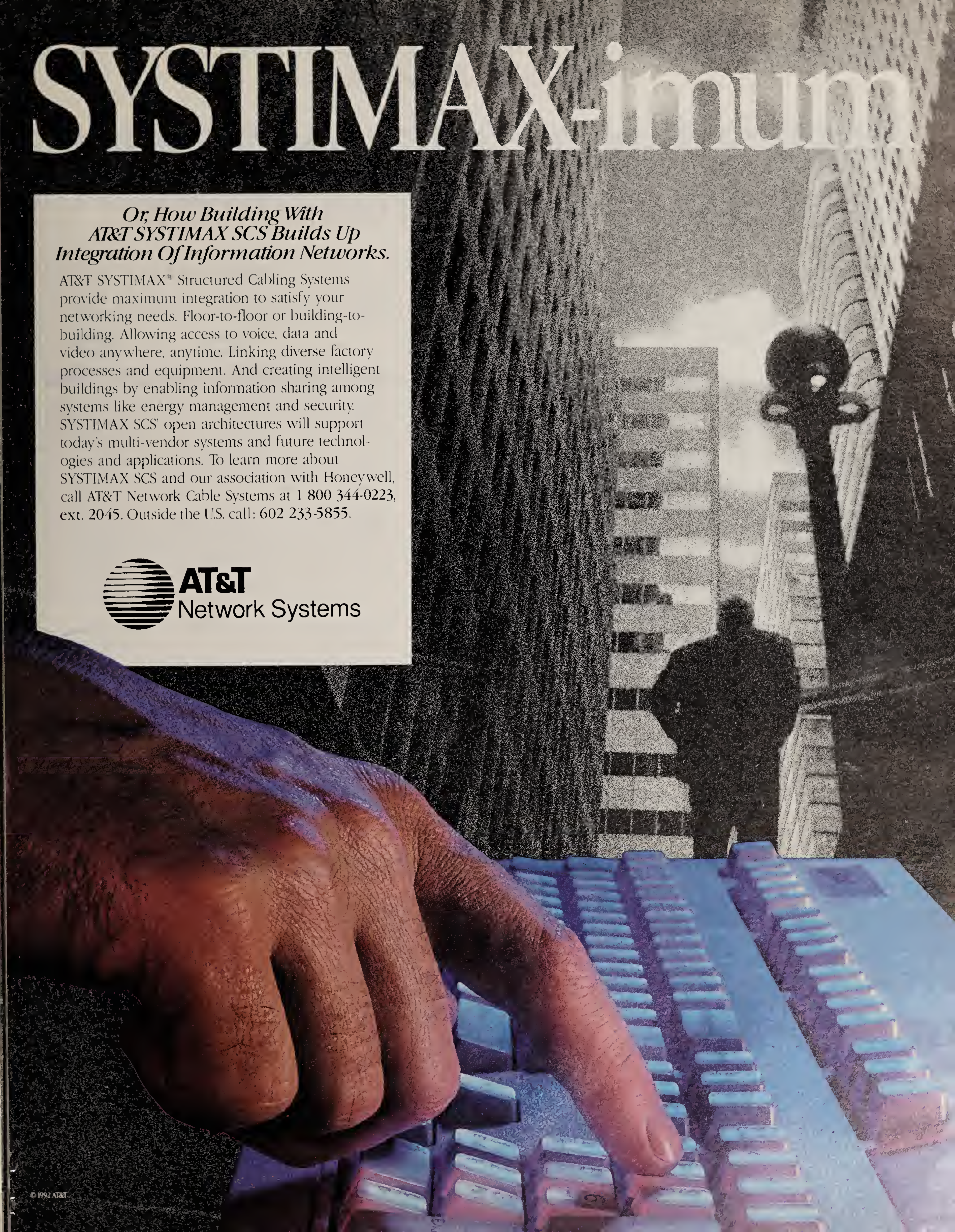
There are several areas of weakness that must be addressed by RDBMS vendors to make mission-critical client/server applications a reality for mainstream customers:

Locking: Certain RDBMSs, especially Sybase and Oracle, depend on programmers and end users to correctly lock data records and check for data consistency in their programs. This is a major divergence from mainframe DBMSs. The problem in client/server environments is that locking creates a lot of network overhead and negatively impacts performance and response time. But ignoring data integrity to achieve better response time is a dangerous path.

Administration: Client/server database servers are lacking good monitoring and administration tools. It is difficult to tune systems because there is not much information about resource utilization and transaction bottlenecks. In this area, products such as Digital Equipment Corp.'s RDB/VMS and IBM's DB2 are far ahead of mini and micro database servers. Database recovery is also far better automated and reliable on the mainframe.

Transaction management: Transaction managers recover transaction message queues, deliver finer levels of security, support multisite updates and let the systems administrator assign transaction priorities. Without these controls, it is very difficult to provide predictable response time and reliable transaction processing (TP). In the future, TP monitors have to be better integrated into the client/server applications on minis and micros if these applications hope to approach the reliability of the mainframe environment.

Query optimization: Database servers also have to do a better job of processing queries that read large tables or join many tables together. Most database server query optimizers are still sluggish and not very intelligent in how they process data. Consequently, users have to spend substantial time and money to manually optimize SQL retrieval commands. Large query processing has always been a problem with RDBMSs. The problem is magnified by the difficulty of writing an RDBMS that can optimize queries across a wide breadth of applications and on a wide variety of hardware and software platforms.



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RDBMS for Client/Server

Buyers' Scorecard: Unix RDBMS market leaders engaged in heated battle

By Derek Slater

They may not be fully optimized for true client/server computing yet, but leading Unix relational databases boast a fairly satisfied user base.

Buyers' Scorecard respondents — roughly 60% of them reporting some form of client/server implementation — rated the four relational database management systems vendors within four points of one another.

Oracle Corp.'s Oracle and Sybase, Inc.'s Sybase RDBMSs finished with equal scores of 72, with Informix Corp.'s Informix-OnLine at their heels with 71. The ASK Group, Inc.'s Ingres RDBMS earned a 68 overall.

Oracle took the highest score in the three categories most important to users: quality of vendor support, responsiveness of vendor service and support for standard SQL. Users also said they liked Oracle's analysis and reporting tools.

However, as with all the other products surveyed, Oracle's application development tools were found lacking by users. Most of the respondents said they use third-party development tools in addition to the RDBMS tool sets.

Sybase users said they like the product's speed and efficiency. Sybase earned the top score in performance in on-line transaction processing, finishing just ahead of Informix-OnLine in user satisfaction in that area. Sybase also scored well in its ability to handle complex tables and processing requests. In verbatim responses, a number of users cited weak front-end development as the product's biggest weakness.

Informix-OnLine earned consistently solid scores in most of the key categories and shared high-score honors with Oracle in system administration functionality and system monitoring capability, though users said its error messages are often difficult to understand. Users praised the RDBMS' stability but also said it can be overly complex.

Ingres scored roughly on par with its competitors in the key areas, lagging slightly behind in responsiveness of vendor service. It also received low ratings in security features. However, a number of users said their primary complaints dealt with the vendor's marketing of the RDBMS and its add-ons, as well as the difficulty of integrating Ingres with third-party tools and other databases.

According to research firm Dataquest, Inc., Oracle dominated the open RDBMS market with 47% of all licensing revenue in 1992. That represents a decrease from a 54% share in 1991. Ingres followed with 17% of the 1992 market; Sybase held 13%; and Informix garnered a 12% share. Following the four leaders, there was a big dropoff, with no other firm holding more than 5% of the market.

Dataquest pegged the total open RDBMS market value in 1992 at more than $1.5 billion.

The survey respondents reported a wide range of hardware platforms, including workstations, fault-tolerant servers and small minicomputers. All variations of Unix were accepted in the response base.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assigned 1-to-10 ratings based on their satisfaction with their Unix RDBMS in 15 specific categories.

All categories were factored into the final scores. The scores for each relational database product in the seven most important categories are listed in the tables below. (See the methodology on the next page for a description of the scoring process.) •

RDBMSs for Unix

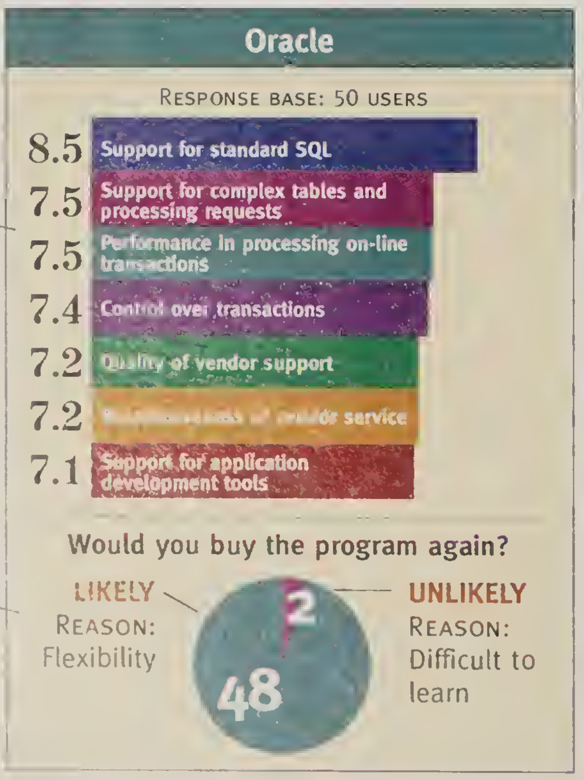
Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 50 users for each product.

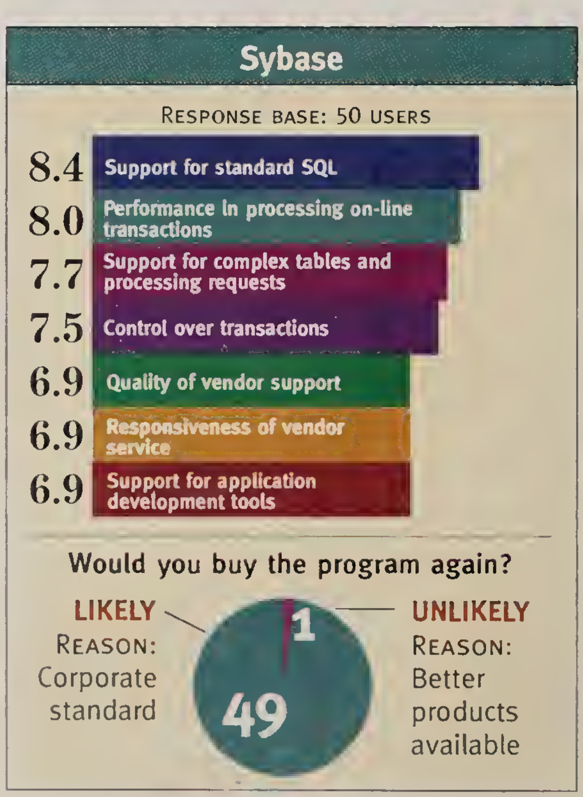
TOTAL POSSIBLE SCORE 100 MEAN SCORE 71

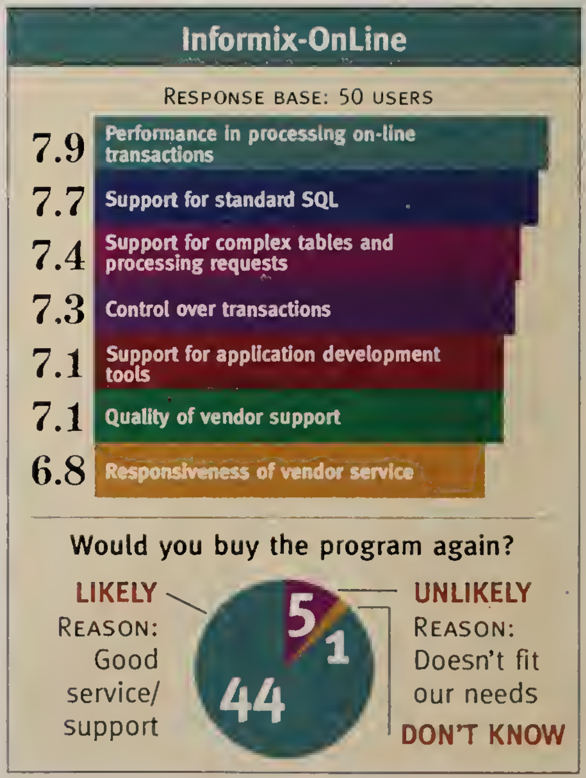
PRODUCT	SCORE	PROS	CONS
Oracle Corp.'s Oracle	72	"Good transaction processing speed, and it's available across multiple platforms."	"It is so complex that it isn't easily learned."
Sybase, Inc.'s Sybase	72	"It does a high number of transactions per second and has a good client/server architecture."	"Sybase's own front-end tools are lacking."
Informix Corp.'s Informix-OnLine	71	"It is easy to create simple applications." "It's versatile and easy to use."	"There's not enough breadth of tools and products."
The ASK Group, Inc.'s Ingres	68	"It has a clean, well thought-out design and implementation of the database engine."	"Interfaces from other vendors are lacking — integration is a problem."

Ratings are based on a 1-to-10 scale, where 10 is best.

Reasons are based on the most frequently stated answers.







Care, feeding for client/server

Database server vendors have done a lot of work to incorporate features specifically for client/server computing. Early on, vendors of these products realized that special functions were needed to support the wide breadth of client applications and users who were going to access database servers.

Triggers

An immediate concern was how to ensure data integrity if users read and updated data from spreadsheets and other decision support tools. None of these tools have any mechanism to edit data or enforce business rules.

Instead of relying on applications to enforce business rules, many database servers have "trigger" mechanisms that automatically and consistently enforce rules.

Triggers are database server-resident procedures that are executed whenever the database is updated. Triggers can edit data, perform calculations, update related data and enforce special database security needs. With triggers implemented, organizations can allow greater database access without fearing loss of data reliability.

Stored procedures

Related to triggers is the concept of stored procedures. Stored procedures are programs that reside in the database server and can be called from any application program. They increase performance by allowing client applications to execute a remote program with a single request to the database server, thereby minimizing network overhead.

Stored procedures also make it easier to share and maintain common application code.

Complex data management

Database servers have also taken the lead in the area of "complex data" management. Long text documents, images, graphics, audio and arrays are examples of complex data that are increasingly being used in PC- and workstation-based applications.

In order to manage complex data, relational databases must support specialized data types such as binary large object (Blob) fields capable of storing up to 2G bytes of data.

It is also necessary to have programming functions that can be used to store, retrieve and manipulate complex data.

Storage architectures

Furthermore, the database physical storage architecture has to be modified to accommodate very large fields. For example, Sybase, Inc. uses a 4-byte pointer for linking records to Blob data. This helps maintain an organized and high-performance data storage structure.

Products such as InterBase (now owned by Borland International, Inc.) and Sybase, Inc.'s Sybase included triggers, stored procedures and Blobs.

The ASK Group, Inc. and Informix Corp. subsequently introduced similar capabilities in their products. Most recently, Oracle Corp. has made these features available in Oracle 7.

—*Richard Finkelstein*

Sleeper RDBMSs

No RDBMS is 100% effective in a client/server environment. But there are some with stand-out features. We asked experts for their opinions on some lesser known RDBMSs with strong client/server features:

Borland International, Inc.
InterBase

- Alerts enable it to trigger an event in the database.
- Provides arrays, which are useful for large-scale modeling, and multidimensional arrays for models in different planes.
- Can handle distributed updates on files.
- Useful for manipulating complex data such as drawings and graphs.

Coromandel Industries, Inc.
Integra RDBMS

- Provides the ability to add new access methods.
- Adds functions to SQL languages.
- Allows the developer to modify the capabilities of the database and add new features.

Empress Software
Empress

- Strong development tools.

Progress Software Corp.
Progress

- Exhibits high performance in execution of applications.
- Good development language.
- High portability.
- Stable environment.

Unify Corp.
Unify RDBMS

- High transaction performance for running real-time applications.

UniSQL, Inc.
UniSQL/X DBMS

- Blends object-oriented with relational features.

XDB Systems, Inc.
XDB

- DB2 compatibility.

Sources: Paul Bloom, Volpe, Welty & Co.; Donald A. DePalma, Forrester Research, Inc.; Herb Edelstein, Euclid Associates; Richard Finkelstein, Performance Computing, Inc.; and David McGoveran, Alternative Technologies, Inc.

Vital statistics

What is your position?	
CIO/VP/IS director	21
IS manager	34
Operations manager	13
Database administrator	16
Systems analyst	40
Other	76

What is your responsibility for your Unix RDBMS?	
Evaluate or recommend vendors	178
Determine need	157
Select vendors	148
Set standards for your organization	135
Buy for end-user department	98
Approve or authorize purchase	83

How long have you worked with your RDBMS?	
Five or more years	122
3-4 years	44
1-2 years	27
Less than 1 year	7

Response base: 200

Platforms

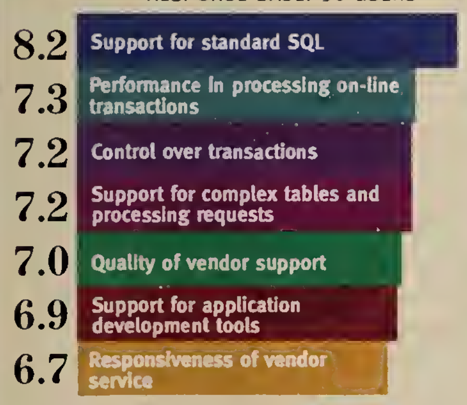
Respondents report a wide variety of hardware platforms for their Unix RDBMS:

Unix workstations	57
IBM RS/6000 server	36
Tandem or other fault-tolerant server	17
Sun server	14
AT&T system	14
Other/No answer	103

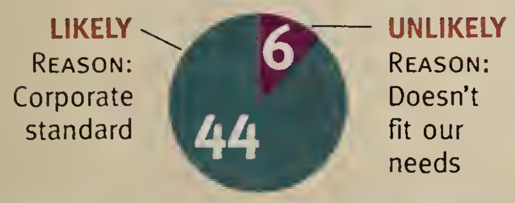
Response base: 200

Ingres

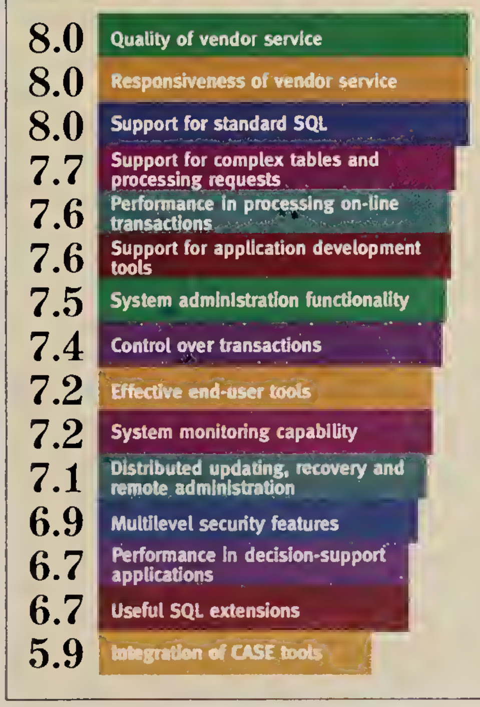
Response base: 50 users



Would you buy the program again?



Ratings in order of importance



METHODOLOGY

User names were obtained from nonvendor sources. First Market Research Corp. in Austin, Texas, conducted the survey and tabulated the results. The response base was 50 users for each product.

Users rated their satisfaction with their installed products and were not asked to rate one product directly against another.

To compute the overall score for each product, we performed the following steps: 1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score. 2) Repeat the process for all remaining categories. 3) Average the resulting figures for the average weighted score. 4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10. Numbers were rounded where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following for their assistance in preparing this Buyers' Scorecard: *Computerworld* Database Division; Dataquest, Inc.; David McGoveran, Alternative Technologies, Inc.

RDBMS for Client/Server

One letter makes all the difference

By Alan Radding

Just when you thought you had on-line transaction processing (OLTP) figured out, they changed the game. When it comes to relational database management systems and client/server computing, OLTP is out and OLCP is in.

On-line complex processing (OLCP) is a type of processing common in client/server environments — that is, applications that involve long-duration transactions consisting of both reads and writes.

As with OLTP, OLCP users need to query an on-line database; unlike OLTP, they will browse, query, aggregate data and make updates all in a single transaction.

A good example of an OLCP-type application is an inventory application. While order takers need to move in and out of the database quickly to make updates (OLTP), the company's buyers need to linger to analyze inventory status in a variety of ways (OLCP). They may even make changes to the database.

This poses a problem for the database administrator. He wants the order takers to continually take orders, but he also wants the buyers to have an accurate view of the data.

And it puts pressure on the RDBMS to effectively be all things to all people. It must support a lot of users accessing the database simultaneously (called high concurrency) while ensuring the integrity of the data in such a way that a repeatable function delivers the same result each time (called consistency).

Weak performance

So while OLCP is something that RDBMS vendors — particularly Oracle Corp. and Borland International, Inc. with InterBase — are hyping, "it also addresses a significant user problem," says Judith Hurwitz, president of the Hurwitz Consulting Group in Newton, Mass. That problem is the unexpectedly weak performance of RDBMSs when running client/server-based applications involving a moderate amount of transaction processing along with decision support activities.

The basic problem is contention among users, which negatively impacts the performance of the RDBMS, says Judith Davis, an industry consultant in Lexington, Mass. The database, in the name of consistency, locks all other users out of data while a single OLCP user merrily goes about a long-duration transaction. If, on the other hand, the RDBMS allows the users unfettered access to the data, some users will be updating data while others are using that data in their long-duration transactions.

The solution comes down to a different approach to RDBMS locking, Hurwitz says. In the standard approach, data that is being used is locked, preventing others from accessing it. This approach maintains consistency at the expense of concurrency, especially during lengthy transactions. But it's perfect for databases that were designed for peak OLTP performance because each transaction lasts only a brief time.

OLCP databases, on the other hand, use an approach called "versioning." Versioning gives each user a snapshot of what the database looked like at the precise instant the transaction began. Each snapshot, then, is a different version of the database.

With Borland's InterBase, for instance, readers never block writers, and writers never block readers. Locks are applied to prevent multiple writers from writing over the same data simultaneously.

The versioning approach could potentially get out of hand as the database saves proliferating versions of the changing data. However, InterBase saves only the changes and automatically throws out versions when the corresponding transaction is finished and a more recent version of the data exists.

Blob support

Another key requirement of OLCP is support for nonconventional data types, such as images, graphics and other large, nonconventional types. This is typically handled through the use of binary large objects (Blob).

Support for nonconventional data types attracted the Public Broadcasting Service (PBS) in Alexandria, Va., to The ASK Group, Inc.'s Ingres RDBMS for its OLCP database of programming information. "Ingres lets us define new data types using C programming," says Frank Pellegrino, associate director of computer services.

PBS created a data type for its complex key that would otherwise involve three columns in a standard table. "This lets us use much neater SQL queries," he notes.

While InterBase has supported OLCP from its inception, it is no longer unique. Oracle's Oracle 7, Ingres and the others are catching up, adding some kind of versioning and support for Blobs, says Mitch Kramer, an independent analyst in Sudbury, Mass., who handles database issues for Datapro Information Services Group. Sybase, Inc., however, has focused primarily on OLTP performance, he adds. •

Radding is a free-lance writer based in Newton, Mass.

Typical applications

OLCP-type applications include financial risk management, bill of materials processing in manufacturing and insurance claims adjustment, according to David McGoveran at Alternative Technologies, Inc.

OLCP in action

Notis Systems, Inc. in Evanston, Ill., is building an OLCP-type application with Borland's InterBase RDBMS. It is a library automation application that is essentially an inventory control system for books. Library staff and library users often perform long, browsing transactions, while books are continually checked in and out of the library. "Eighty-five percent of the transactions are reads," says Cindy Wichman, team leader on the project.

Front-end tools

Close to or far from SQL

Hand in hand with the database server decision is choosing which front-end tool to use. There's a large variety of products that develop full client/server applications. These products have not only query and reporting facilities but also forms-development tools, which are coupled with full programming languages.

Each database server vendor also has its own set of such tools, which are usually highly tuned for the vendor's database server and make optimal use of the RDBMS capabilities.

Third-party vendors try to outdo the DBMS vendor's tools by providing better functionality, productivity and portability. For instance, Gupta Technologies, Inc.'s SQLWindows and Powersoft Corp.'s PowerBuilder give developers a very fine level of control over applications, but in order to use these products, developers have to learn complicated languages and sophisticated programming techniques. These packages offer object-oriented capabilities and team development facilities, which make them appropriate for large projects.

Uniface Corp.'s Uniface and Microsoft Corp.'s Access are two products that try to make application development and database access more transparent to the user.

These products automatically manage common application functions, such as linking and synchronizing multiple tables on a form; providing built-in multirow retrieval and scrolling capabilities; and automatically issuing the necessary SQL commands for updating and retrieving rows in the databases. These functions shorten the learning curve.

Of the two, Access is easier to learn, but Uniface excels in functionality. Uniface has also done a much better job of optimizing its product for different target database servers. For example, it will automatically generate stored procedures and triggers if the target database server supports these functions.

Of the two, Access is easier to learn, but Uniface excels in functionality.

Uniface has also provided customized transaction management and locking techniques that are tuned for the target RDBMS but are transparent to the developer.

Access has a very weak database server link. It does not directly support specialized features such as stored procedures and triggers. Very often, it will even resort to record-at-a-time processing instead of much more efficient multirow processing (set-level processing) when retrieving and updating records.

This type of interface yields very poor performance and is sure to disappoint almost anyone who is looking to use Access as a client for database server applications.

At the lower end, there are very simple tools intended for end-user database querying. Two of these, Approach Software's Approach and DataEase International, Inc.'s DataEase Express, hide SQL from the user. The user is asked to specify the tables that will be accessed and the criteria that will be used to select rows. The software then translates the specifications into equivalent SQL commands.

—Richard Finkelstein

Too much of a good thing?

Look for front-end products that are optimized for your database server. It is unlikely any vendor could build drivers that work well with more than a few database servers, so a vendor who claims support for "50" RDBMSs must be looked on with suspicion. But if the tool is simple or is only reading the DBMS, it may be possible to build interfaces to a larger number of RDBMSs.

Gupta SQLBase 5.1:
Users laud price/performance, compatibility, improved reliability

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

Gupta SQLBase 5.1

- Users of Gupta Corp.'s SQLBase Server 5.1 said it is the first viable release of Version 5.x of the database server. While Version 5.0 — which was released in early 1992 — was fraught with problems, users concurred that Version 5.1 is fairly solid and delivers on the promises made by Gupta.
- Users also said applications written for SQLBase Server Versions 3.x and 4.x were easily ported to Version 5.1, with performance improvements of 50% to 200%.

Gupta's SQLBase Server 5.1 may not be the most dramatic upgrade ever made to a database server, but it represents a big improvement over Version 5.0, which began shipping in early 1992.

When SQLBase 5.0 arrived last year, Gupta officials said it included all of the features found in pricier, industrial-strength databases such as Oracle Corp.'s Oracle and Sybase, Inc.'s Sybase. For sites using Novell, Inc.'s NetWare, the biggest news was that SQLBase 5.0 would be offered as a NetWare Loadable Module (NLM), promising better integration with the network operating system.

RATINGS

Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance to users. Oracle 7 ratings are based on a previous evaluation by four different users [CW, Sept. 14, 1992].

	Gupta Corp. SQLBase 5.1	Oracle Corp. Oracle 7
Overall rating	3.8	4.0
Installation	3.5	4.0
Reliability	3.5	4.7
Performance	3.3	5.0
Technical support	2.5	4.0
Acquisition cost	3.8	2.8
Ease of use	4.7	3.7
Compatibility	5.0	4.8
Interoperability	4.5	4.8
Enhancements	3.5	4.7

All versions of SQLBase 5.0 were to include other features: referential integrity; compatibility with IBM's DB2 syntax and semantics; a bevy of performance improvements, including a query optimizer that would dramatically boost database response; and enhanced database features for better windowing applications.

Unfortunately, success was not to be. Instead, the company faced a torrent of bug reports and complaints from customers. Chastened company officials halted shipment of SQLBase 5.0 and began an intensive repair effort that included a "Gupta SWAT Team," according to a company spokesman. After months of effort — which included interim releases of SQLBase Server Versions 5.0.1 and 5.0.2 — the company finally shipped Version 5.1 in September.

The four users who participated in this evaluation — all of whom worked with 5.0 — concurred that Gupta's technical personnel worked valiantly to repair earlier deficiencies. That was all to good effect. Version 5.1 of SQLBase Server — sans bugs — is said by Firing Line evaluators to be the first viable release of the product.

The evaluators had each deployed SQLBase 5.1 in departmental production environments with 20 to 250 users. Platforms used for SQLBase Server ranged from multiple 486-based machines from various manufacturers (one user had 20 such systems) to Tricord Systems, Inc. superservers.

Among these users, applications ranged from traditional order-entry and decision support databases to a binary file-retrieval system demanding a high-performance indexing system.

Installation

Evaluators said installation presented no particular difficulties. NetWare needed a few adjustments to handle SQLBase NLM.

Systems integrator: "I expected [the installation] to be troublesome, but we installed it in about half an hour and had it running in the same time."

Facts about Gupta's SQLBase 5.1

- 67 transactions per second, using Transaction Processing Council's TCP-B Benchmark tests and audited by Codd & Data Consulting.
- Available for Sun Unix, DOS, OS/2 and as a NetWare Loadable Module (NLM).
- Supports partitioned databases across multiple disk drives.
- Scrollable cursor support for windowing applications.
- Referential integrity, which is compatible with IBM's DB2 syntax and semantics.
- Available as an NLM for NetWare LANs.

Consultant: "If they could pick up an existing configuration file, it would be a little bit better."

Reliability

Users rated the reliability of Version 5.1 as slightly better than average. They agreed that the earlier problems — ranging from SQLBase anomalies to full NetWare crashes — had been repaired. Bugs had been whittled down to a minimum.

Systems integrator: "When the NLM first came out, we had tremendous problems. But almost all have been addressed."

Retailer: "We had problems with the database not being a recoverable entity, but with 5.1, these problems seem to be resolved."

Performance

None of the users had run formal benchmark tests on SQLBase 5.0 or 5.1. However, they agreed that average performance boosts ranged from 50% to 250%. Most of this increase occurred at the lower end of the scale, although a limited number of very specialized operations had produced a magnitude of performance improvement.

Systems integrator: "We were hoping to get a 200% to 300% increase in performance. It was about 74% to 100%."

Retailer: "When we went from 4.x to 5.1, we saw a 25% to 30% improvement in large updates."

Gupta SQLBase 5.1, *page 66*

SQLBase users say network monitoring and configuration are improved, but tech support lacking

CONTINUED FROM PAGE 65

Installation descriptions for users who evaluated Gupta's SQLBase 5.1 database

	Computer services	Insurance	Retail	Consultant
Server hardware	4 TriCord Superservers	4 Advanced Logic 486/33s	1 HP Vectra, 2 Compaq SystemPros	2 486/33 Systems
Network	Novell NetWare	Novell NetWare	OS/2 LAN Manager	Novell NetWare
Number of users	250+	80	40+	20
Number of applications	7	3	8	3
Application type	Complex mixed	Complex mixed	Complex decision support	Complex decision support
Read- or write-intensive	Read-intensive	Read-intensive	Read-intensive	Both
Time using SQLBase 5.1	4 months	7 months	3 months	7 months

Consultant: "I expected my applications to go twice as fast, but it's more like five times as fast."

Technical support

Gupta took its biggest hit on technical support. Although evaluators said support is now satisfactory, below-average ratings reflect the grueling experience of 1992. One user said Gupta's support options were overpriced and inflexible.

Systems integrator: "The support was stellar, but we had to go to the vendor more often than we should have."

Retailer: "I use the bulletin board for support. They have gotten back to me on everything I've asked."

Consultant: "Even though they have good technical people, their bulletin board software absolutely stinks. They should throw it away."

Cost

SQLBase is one of the least costly database servers available. At prices of $995 to $9,995, it is more affordable than offerings from other high-profile database vendors. For an organization based on a desktop and superserver information systems strategy, SQLBase can cost as little as one-quarter that of the competition.

Retailer: "The costs of ownership and operation are much, much less" than a minicomputer database product.

Insurance company: "The pricing was very good compared to the prices of some of the other products."

Ease of use

All of the evaluators agreed that administration of SQLBase 5.1 was far easier than that of previous versions. They cited network monitoring and configuration as big improvements. However, one user said better integration with third-party administration tools is still needed.

Systems integrator: "In comparison to Version 4.x, we can monitor server space and configuration parameters and use the remote console. It's very enabling."

Insurance company: "It's not for the faint of heart or the novice user. You have to spend time with it."

Compatibility

All of the evaluators had placed SQLBase applications into production with Version 3.x or 4.x. They said converting these applications to Version 5.1 was painless and presented no problems. Conversion times ranged from half an hour to half a day.

Insurance company: "It's basically converting the database and maybe changing the routers. It's pretty straightforward."

Interoperability

Users were almost exclusively operating in SQLBase environments and did not have a tremendous need for interoperability with other database products. One user was transferring tables from IBM's DB2 to SQLBase on a nightly basis but did this through an indirect file-transfer mechanism rather than a direct link between the databases.

Insurance company: "We've had almost no problems with multiple [SQLBase] platforms running. There was a little tweaking of NetWare parameters for our remote [SQLBase] sites."

Enhancements

Although enhancements made to SQLBase 5.x were significant compared with Version 4.x, users did not consider those improvements to be much greater than expected. While they had anxiously awaited features such as referential integrity and scrollable cursors for windowing applications, they also noted that similar features were offered by other database vendors. They considered most of these improvements competitive but not futuristic.

Systems integrator: "We're more interested in performance than enhancements at the server end."

Insurance company: "Password encryption and release-lock isolation were very important to us. Partitioned databases will be."

Consultant: "I like what they added. The referential integrity and query optimization are very high on my list."

Written and compiled by Garry Ray, senior editor, application development.

Gupta responds

These are Gupta's responses to the issues raised in this evaluation:

Q: Why did Gupta release SQLBase Server 5.0, which was so clearly unready for market?

A: When we released Gupta SQLBase Server, it had successfully completed Gupta's rigorous beta-test program. Once the product began full production shipment, we began receiving bug reports. We took immediate and strong action, including the appointment of a Gupta SWAT team to address the technical problems and the immediate halt to SQLBase Server shipments around the world until all problems were resolved. We apologize for any inconvenience suffered by our customers during this time. During the final quarter of 1992, we shipped nearly 5,000 SQLBase Server 5.1 single and multiuser engines, including upgrades.

Q: How will Gupta accommodate trends toward increased client/server and distributed computing while maintaining high user ratings for compatibility and interoperability?

A: Gupta has a three-pronged strategy to meet most user needs: providing a world-class database server with unbeatable price/performance; the best graphical end-user and professional programmer tools; and highly functional middleware if a customer chooses other products besides SQLBase Server.

Q: How will Gupta address the perception among its customers of average technical support?

A: During the past year, we've more than doubled our technical support staff; initiated Pay Per Incident support for the smaller customer; introduced Strategic Technical Account Representation for the enterprisewide customer; and installed an automated technical support phone system. We have begun mail surveys and outbound calling of customers to continually assess how we are doing.

COMPUTERWORLD PRODUCT EVALUATION COUNCIL

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OUTSOURCING confessions

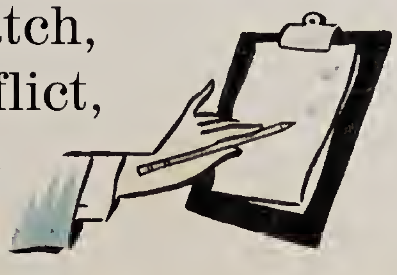
Revealing talk about why partnerships sour

ROLLIN McGRAIL

By Louis Fried

YOUR OUTSOURCING contractor is not your friend. No matter how much it talks about customer service, treating you like its only client and inviting you to customer appreciation days, the contractor is in it to make money. After all, business is business.

The outsourcer's needs and yours may not always match, and in cases of conflict, guess whose needs come first?



Before you sign a contract, make sure the outsourcer is legally bound to take care of your company's needs, not its own. Appropriate preparation, intelligent bidding and contracting procedures and vigilant monitoring of your contract go a long way toward making sure your company's outsourcing experience works out.

Because when it doesn't, it can get pretty ugly. Below you'll find some (fictional) confessions from information systems managers who wish they had never heard the word "outsourcing." Their tales of woe will reveal problems with outsourcing, and we'll provide you with ways to avoid the same fate:

Confession:

"The first couple of years we were outsourcing, we saved money, like everybody said we would. But then costs started to escalate rapidly. We got hit for increased transaction volumes. When our vendor added computer capacity and upgraded equipment, guess who had to dig deeper into its pockets? Our sweet deal cost us more than we'd thought. My problem? Escalating costs."

Professional Opinion:

Outsourcing vendors want to protect their profits. Watch for contract clauses that let them charge for additional items.

If service requirements change, they may add charges for new or expanded services. If transaction volumes go up beyond the baseline mentioned in the contract, you may have to pay the difference. Contractors may also pass along costs for adding computer capacity or upgrading equipment.

That's not to say that contractors will upgrade equipment and adopt new technology when *you* need it, especially if such moves are going to threaten their profits or revenue stream. If your firm is on the technology edge or expects

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Outsourcing

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to save money by adopting technologies such as client/server, you must be very careful in delineating responsibilities under the outsourcing contract. Otherwise, you risk a delay in adopting these new technologies. In the end, not only might you fail to achieve any cost reductions, but your total costs may increase.

Companies with distributed environments should be especially wary of escalating costs. Contractors like to take advantage of economies of scale, such as combining the work of several customers into one facility. In this way, they can handle work with less equipment and fewer staffers than customers had at their own sites. Distributed setups don't jibe with centralized control. To make their profits, outsourcers may charge fees for managing and controlling a distributed environment.

Some organizations incur additional costs in unusual places. In a recent study, the U.S. General Accounting Office (GAO) reported that some banks had to pay their outsourcers because the contractors bought the banks' computers at book value rather than the usually lower market value. The banks will likely pay the difference in their outsourcing agreements, says Stephen White, an electronic data processing review examiner at Federal Deposit Insurance Corp.

Other costs to bird-dog include those associated with moving your software systems to a contractor's facilities. In recent lawsuits, for instance, software package suppliers have required increased license fees to move their software. Also, don't forget that even though taxes or inflation adjustments may not be part of a vendor proposal, they will likely turn up in the final contract.

Treatment Plan:

Your firm's only protection against escalating costs is a thorough specification of the services you expect to receive. Review all contract clauses that permit the contractor to bill additional amounts over the agreed-on price.

Any contract you sign for computer or network operations outsourcing should contain optional renewal clauses after the first year or two. Any contract for systems development or integration should be segmented in phases. Chopping up contracts in this way gives you breathing room. It lets you continue the contract only if you're satisfied with costs and performance at each time interval.

Confession:

"There was not much we could do about saving our outsourcing contract. After all, when our company merged last year with a competitor whose IS division also had an outsourcing contract, we needed to rethink things. We ended up dropping our contract and had to pay a stiff penalty. My problem? Contract termination fees."

Professional Opinion:

A couple of Pittsburgh banks can empathize with this confession. Integra Financial Corp. and Equimark Corp. merged in late 1992. At the time, each had its own outsourcing agreement. When the newly merged company decided to drop one of its contracts, it had to pay the losing vendor $4.5 million for contract termination.

Also, last May, Freeport-McMoRan, Inc., a $1.5 billion per year mining and petroleum company, canceled its 10-year, $200 million agreement with Electronic Data Systems Corp., signed in 1988. Freeport coughed up a large penalty, the exact amount of which was not disclosed.

Outsourcing contract termination penalties can be severe unless there is an established reason for getting out. Even in such a case, the dispute may wind up in court.

Treatment Plan:

This one goes under smart contract management. You've got to have escape clauses in your contract that let you terminate or scale back the agreement under certain circumstances, such as a sale or merger. You want to limit your penalties only to costs incurred in the termination.

You also want to make sure you don't have to pay termination penalties if you cancel the contract because of vendor misconduct or poor performance, which happens more often than you would think. A GAO survey of 240 banks released in 1992 found that between 20% and 30% of the banks' outsourcing contracts contained some sort of "hanky-panky."

In a recent situation, for example, the Environmental Protection Agency (EPA) accused Computer Sciences Corp. (CSC) of fraudulently billing them for $13 million (about 20% of the contract value). The EPA has refused to renew the contract with CSC.

Staff members at one major financial institution played it smart. They had escape clauses that came in handy when they began to have problems with their multimillion-dollar outsourcing deal for all systems development and mainframe operations. After one year of dismal vendor performance, the financial company scaled back its contract, letting the outsourcer only consolidate the client's multiple data centers and operate the resultant site. Systems development work reverted to the in-house IS group.

To keep things straight in case of a dispute, clearly indicate who owns the information and materials and who owns the rights to use the information and processing if there's a disagreement. Try to avoid court if you can by establishing arbitration rules for disputes.

Confession:

"I went to an outsourcer to cut costs, but I didn't think I would end up sacrificing performance to save money. Today, I'm looking for a job. My problem? No performance evaluation."

Professional Opinion:

It is impossible to know everything that will happen during an outsourcing business relationship. But one thing is important above all else: making sure you get the performance you need. The only way you can make sure a vendor will and does provide you with adequate performance is by measuring its performance.

Treatment Plan:

What our poor confessor should have done is specified, to whatever extent possible, the performance he wanted from his outsourcer and how he expected performance to be measured and reported.

Outsourcing systems development or integration can be risky if your firm does not have the technical and management capability to monitor the contractor's progress and technical decisions.

The development team's poor technical decisions are said to be at the core of the collapse, in August 1992, of the project to build the Confirm airline reservation system. The result has been hundreds of millions of dollars in lawsuits and countersuits between Hilton Hotels Corp., Marriott Corp., Budget Rent A Car Corp. and the contractor, a subsidiary of AMR Corp. Each wants to salvage something of the $125 million invested.

At minimum, you should specify your performance expectations and measurement methods for the following:

- Transaction volumes.
- Critical needs for timeliness and/or response time.
- Critical needs for security.
- Critical needs for business resumption in the event of catastrophe.
- Needs for local processing (e.g., PCs, local-area networks, client/server systems, etc.).
- Anticipated new applications development and resulting system work load.
- Expected adoption of new technology.
- Measures of performance and frequency of performance audits.

If you don't have a plan of your own on how to monitor a project, you should consider the Department of Defense's technique of independent validation and verification. This approach entails hiring an independent contractor to conduct periodic reviews of project progress and technical decisions made by the prime contractor.

Confession:

"We farmed out some systems development to a vendor. We got back the system, set it up in our business unit, and it didn't work. Now we've got to put in place some costly fixes. My problem? Inadequate systems acceptance testing."

Professional Opinion:

To outsource systems development or integration requires that your company lay down some rules about when a system is acceptable.

Treatment Plan:

Before you go into any systems development outsourcing deal, work up a detailed requirements definition to avoid increased costs or poor performance.

Crash course in contracts

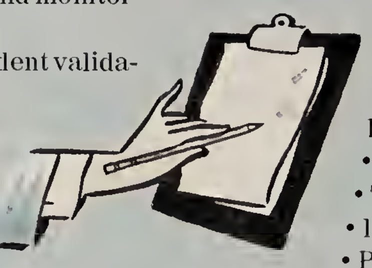
Here are key areas that outsourcing bidders should address in their proposals or outsourcing companies should include in their contracts:

For systems integration or systems development:

- Basis for additional charges.
- Phased approvals.
- Storage of weekly progressive development results.
- Progress reporting and monitoring.
- Right to use independent validation and verification.
- Performance expectations and measurement methods.
- Acceptance test procedures.
- Final acceptance conditions.
- Warranties.

For outsourcing operations:

- Capacity or upgrade approval requirements.
- New technology expectations and approvals.
- Distribution of operations.
- Software lease implications.
- Renewal options.
- Acceptable performance and measurement methods.
- Disaster recovery and backup.
- Disaster recovery and backup testing.
- Information security provisions.
- Right to audit information security practices.
- Provision for contingency operation.
- Storage of information copies.



In requests for proposals:

- Dispute resolution.
- Tax implications.
- Inflation implications.
- Proprietary information safeguards.
- Termination for cause.
- Requirements specification.
- Partial or full termination conditions and penalties.
- Rights in ownership of data and programs.
- Bid evaluation methods.
- Proposed agreement terms and conditions.

The requirements definition must address not only the functions and features of the system but also expected performance characteristics and the business and technical environment in which the systems will operate.

Most critically, you've got to have a plan for acceptance testing, procedures and scenarios that is based on your requirements specifications.

The acceptance test period may be limited to a single "volume stress test" or may be extended to include a pilot operation or even a specified time during full implementation. Always update your acceptance test to reflect any changes you request or the vendor recommends.

Many companies withhold a percentage of the contract price until they are satisfied with the system.

In the case of Florida's Department of Health and Rehabilitative Service, the group is withholding its payment to EDS because of defects the agency says exist in an EDS-developed system. EDS has filed a $46 million suit to collect money it says the agency owes for the new system.

Confession:

"It broke my heart, but I had to lay off several people on my IS staff because we outsourced some of our data processing functions. Next thing I know, we have to go to court. My problem? Staff lawsuits."

Professional Opinion:

If you anticipate having to reduce staff because of outsourcing, plan such reductions carefully or you may find yourself in court. Former IS employees sued Nashville Electric Service, for instance, on the grounds that the company didn't follow proper procedures for a regulated utility. In the case of Midwestern bank, transferred IS staffers brought suit, claiming that the benefits they received from the contractor weren't equal to those they got from the user firm.

Treatment Plan:

It is not enough to reassure employees that their jobs are "secure." Your planning may have to include early retirement offers and/or extended layoff benefits. Employees have to know what awaits them, or you'll sabotage your efforts to plan, evaluate and migrate to an outsourced environment.

Besides, unhappy employees won't be willing to help you get through the outsourcing process.

Make sure you examine all the options for your employees early in the stages of an outsourcing decision. During request for proposals, require bidders to explain what they will do with "extra" employees. Get detailed information about the bidders' salary ranges and benefits programs to pass on to staff.

Share as much information as possible with the affected employees, soliciting their opinions and comments. Don't ignore their problems; deal with them head on. •

Fried is vice president of information technology at SRI International in Menlo Park, Calif.

Are you practicing safe outsourcing?

It's up to you to make sure your outsourcing experience is a good one. What follows are some steps for safe outsourcing:

For operations outsourcing:

- Store copies of data and programs at your site.
- Periodically audit contractors' information security practices.
- Periodically test backup-and-recovery capabilities.
- Regularly monitor performance to contract specifications.

For systems development outsourcing:

- Control requirements specification changes.
- Regularly monitor progress, design and technical decisions.
- Plan and control acceptance testing.

For all types of contracts:

- Develop a comprehensive requirements specification and request for proposals.

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Job searching on-line

Databases aid IS job seekers

By Kelly E. Sewell

IF YOU'RE ITCHING TO DO SOMEthing else with your life, a new job in information systems may be as close as your fingertips: Several companies have sprung up that offer job listings on-line.

Some services require users to pay a fee, but most don't cost more than what the phone company charges to dial in. These services allow IS professionals to post their resumes for potential employers to access, and some allow the job seekers to view job openings and apply for positions on-line.

James Gonyea, a former career counselor who will go live with his own database, Help Wanted USA, next week, says IS professionals have an edge over other job-searchers because they have computers at their disposal. Many firms post positions electronically because they know competent IS people will use what they know best — computers — to find jobs.

On-line services vary in the way they work. Some, such as Job Bank USA, are a one-way exchange: Applicants send in resumes and companies can choose from among them, but there are no employer listings.

Others, such as On-Line Career Fair and *Computerworld* Careers On-Line, are two-way exchanges where applicants browse through on-line job postings and pick only the ones they're interested in.

No guarantees

Of course, posting your resume doesn't guarantee that potential employers will come knocking. Kelly Foster, a Lisle, Ill.-based user of on-line databases, posted his resume on two such services for more than a month and did not get any response.

All of the services contacted keep resumes posted for one year, and most let you update them.

Sewell is assistant editor, features.

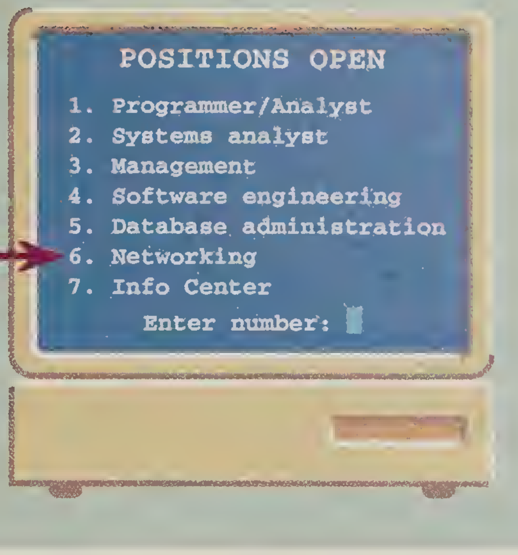
How on-line bulletin board systems work:

1. Using a PC and modem with communications software, you can dial in to a database of job postings.

2. A main menu asks you to choose the geographic region where you'd like to work.

3. You may then examine career services for that region or view local job openings.

4. If you choose to peruse job openings, a screen like this might appear.



5. Let's say you choose Networking. The screen then displays all such openings in the region.

6. You can then ask for more information, view listings by industry or company, or return to the main menu for instructions on how to electronically post your resume or apply for a specific job opening.

CW Graphic: Tom Monahan

Benefits:

- Many listings in a single source.
- Inexpensive.
- 24-hour access.
- Bulletin boards are global.
- Job-searching tools in one location.

Drawbacks:

- Impersonal.
- Some allow posting of skills profiles only, not complete resumes.
- Not always current.
- Not enough firms recruiting on-line.
- No control over who can access resumes (current employer, recruiters).

On-line job-search services

- **Affinity.** Data Processing Management Association (DPMA) and DQIS, Inc. (708) 825-8124. Database of skills profiles; available in April. $7.50/year for DPMA members; $12.50/year for nonmembers.
- **Computerworld Careers On-line.** (508) 879-4700 (modem). Job seekers can view *Computerworld*'s recruitment ads and upload their resumes. No charge.
- **Job Bank USA.** (800) 296-1USA or (703) 847-1706. Applicants' resumes are posted on-line. Employers contact Job Bank USA to interview applicants.
- **JobNet.** (609) 683-9191 or (609) 683-4422 (modem). At "log-in" prompt, type "Datapipe." Program walks you through menu system. No charge.
- **Help Wanted USA.** Gonyea Associates, Manchester, N.H. (603) 622-5587. Available in mid-February. Database of U.S. help wanted ads. $7.95/month.
- **On-Line Career Fair.** Response Technologies Corp. (603) 726-3344 (modem). Hit return twice, enter password "new job." Features technology jobs. No charge. Applicants can apply for positions on-line.
- **E-Span** and **America On-line's Career Center** are available through **CompuServe** and **Prodigy**. Limited to subscribers. $7.95/month.

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Career advice for the '90s

Fighting misperceptions about age

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Steven B. Fogle, a managing director at the Alexander Group, an executive search firm with offices in San Francisco and Houston.

Q: I work at a $500 million company as a manager of systems development. IS is a second career for me, and I have only been in the field 10 years. At 53, I am ready for my next job opportunity, but when headhunters call, I feel I am being passed over because of my age. Do you think there is any truth to my concerns?

A: A recruiter may be hesitant if he is not aware of your career history. By no means is 53 the end of your career, and I advise that you continue developing your own network and creating your next job opportunity on your own. Not all companies are looking for the young rising star. Some are looking for solid, experienced middle managers.

Q: I am a vice president of MIS at a Fortune 1,000 company and have been working toward assuming additional responsibility. My boss has asked me to put together my thoughts on my future career development and expanded responsibilities. What areas would complement my current role?

A: You are wise to assume more responsibility and take a greater role in line management. A natural extension would be to assume a role in total quality management, corporate administration and quality assurance and customer service, depending on the industry you choose. You may also want to serve on corporate committees and work toward being on the senior management team to gain wider exposure.

Q: I live in the Southeast, and I am currently being recruited for a management position at a growing company in Los Angeles. When negotiating my employment package, how much of a salary increase should I ask for, and what should I expect in relocation expenses?

A: You have to consider the overall career opportunity. In making a move to a higher cost-of-living area such as California, you should consider the cost of real estate. Determine the market price for your position and what peers in other companies are earning. I usually recommend that an individual expect a salary increase of 10% to 15% when a relocation is required.

Relocation packages vary from one company to another, but most companies will pay for the cost of moving household goods and will also pay for one or two trips to look for housing.

Q: My employer supplies parking only for car pool vehicles. In order to carpool with others, I am forced to work the same hours every day. My boss complains that I never work as late as others do. I have suggested that I can work on my PC at home when needed. However, he won't allow it for security reasons. What do you recommend?

A: Commitment to a company sometimes comes with hardship. I would recommend that you take another form of transportation so that you can control your hours or drive yourself. Unfortunately, this responsibility is yours, and you should be prepared to create goodwill with your employer by being accessible and flexible.

☞ **Burned out? Grappling with work/family issues? Worried about skills stagnation?** WE WANT TO HEAR ABOUT THESE AND OTHER ISSUES THAT AFFECT YOUR CAREER. CALL YOUR QUESTIONS IN USING THE FAST TRACK LINE AT (508) 820-8522, MCI MAIL THEM TO CWCAREERS OR SEND THEM BY FAX TO KELLY E. SEWELL AT (508) 875-8931. IF WE USE YOUR QUESTION, WE'LL SEND YOU A GIFT.

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- We reward employees who come up with procedures that save money and time or improve quality, computer throughput and customer service. We also have a recognition program where each supervisor is budgeted $8 per employee, per month to take employees to lunch or have department pizza parties.

Rick Pacheco, assistant data processing manager/analyst
Levi Strauss & Co., Henderson, Nev.

- We rewarded an employee who went in and changed our applications around to accommodate our hotel's jobs-processing application. This application works during the night to get the system ready for the next day. Employees can accumulate "duck bucks" (play money named after the ducks residing on the hotel premises) until they have enough to make purchases from a catalog of prizes.

Jennifer Netherland, manager of IS
Peabody Hotel, Orlando, Fla.

- I always acknowledge an employee who takes the initiative to fix a problem without waiting for direction from a supervisor to fix it. Even if the employee did not take the correct path, at least he took action.

Edgar Smith, manager of IS
Harbison-Fischer Manufacturing, Fort Worth, Texas

- If an employee pulls an all-nighter in a conversion, then he needs to be rewarded. I can't usually give him a cash bonus, but I reward the employee with time off.

Duane Johnson, manager of management information services
Fairbanks Scales, Johnsbury, Vt.

Compiled by Stefanie McCann, assistant researcher.

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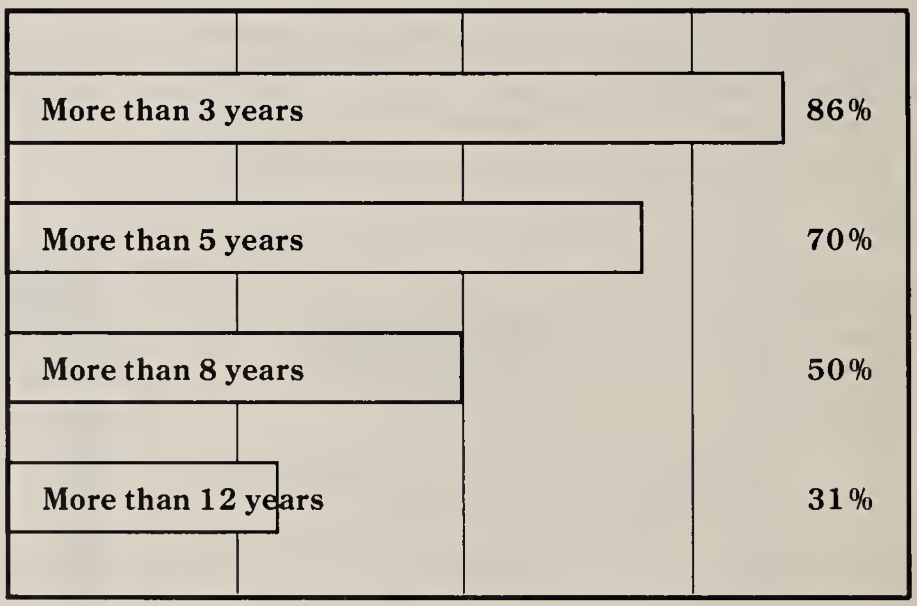

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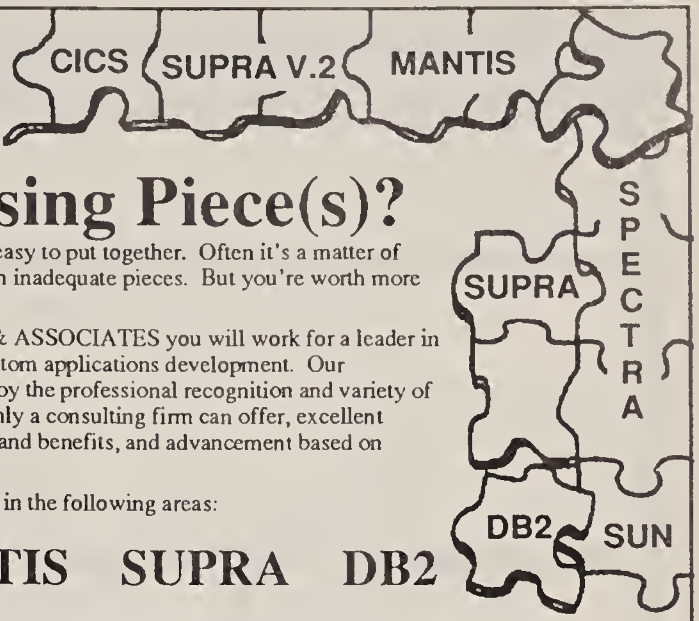

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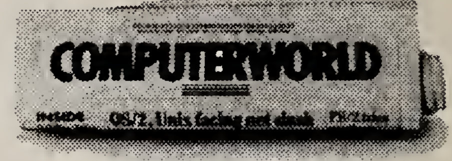

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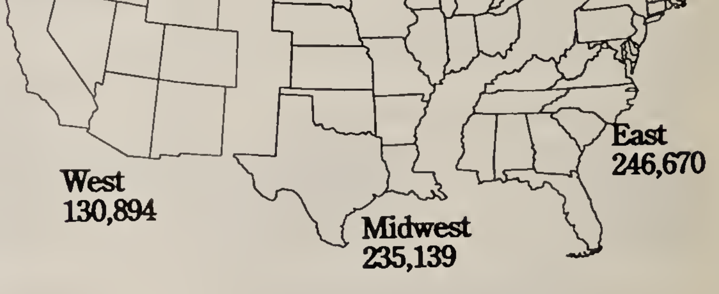

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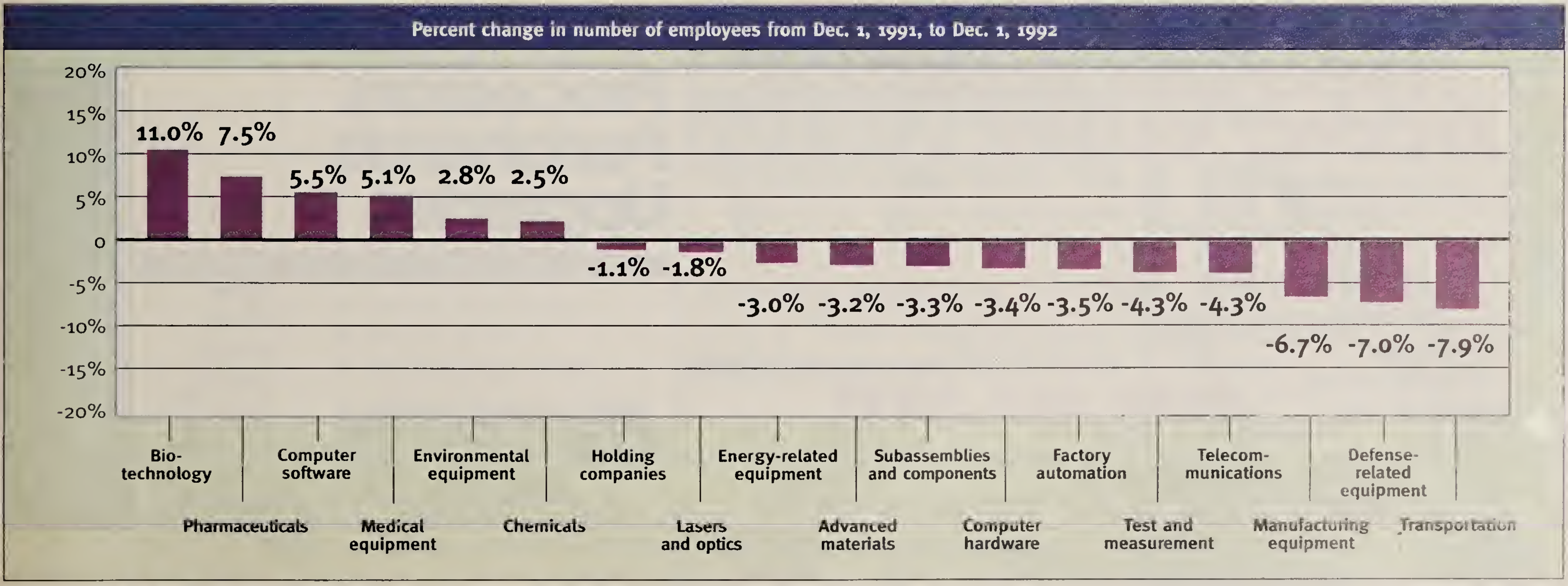
Computerworld/CorpTech Career Index

Of the 4,834 technology manufacturers surveyed by CorpTech during the past three months, 20% expanded their work force, while 19% experienced either shrinking employee counts or business failure. The remaining firms indicated stable employment.



Source: Corporate Technology Information Services, Inc.

VARs repackage to stay in vogue

By Alice Bredin

THERE ARE ONLY TWO kinds of customers: Happy ones and not so happy ones. Value-added resellers (VAR) want more of the former and are adding new services in hopes of getting them.

At one time, most VARs relied on offering hard-to-find technical expertise to set themselves apart. But because of lower revenue, things such as better service and creative payment plans are now in vogue. These may not be new for hardware vendors, but they break new ground in the VAR arena.

"The average amount of money taken from any given sale of technology has dropped," says Lee Levitt, director of distribution channels research at International Data Corp. in Framingham, Mass. "VARs have to better approach every opportunity."

One example of improved services: priority technical support systems, which allow customers to log their problem as "priority one," "priority two" and so on. Long used by software vendors, these systems are making their way into the VAR market, says Mary Margaret Gibson, senior partner at Channel Strategies, Inc., a Palo Alto, Calif.-based distribution channel consultancy.

For instance, when calling into Atlanta-based Brock Control Systems, Inc.'s system, priority one guarantees that a Brock technician will call back within two hours. Priority two or three will produce a call within four or eight hours, respectively.

Cap Schwartz, a database administrator at Telebit Corp. in Sunnyvale, Calif., says the priority system is one reason he stays with Brock. Schwartz recalls an instance before the priority system when a technical problem prevented his entire telemarketing group from doing its job. When he left a message with Brock's support line, he had failed to indicate the severity of the situation.

"It didn't occur to me that Brock wouldn't know that the whole department was down because of this particular problem. Now, with the new system, I automatically relay this information when I call in," Schwartz says.

For most VARs, service and support have become more than marketing slogans.

Other VARs extend a special service to their most lucrative customer base. Coin Dealership Systems, an Atlanta-based systems integrator specializing in the automotive market, offers free satellite communications to all General Motors Corp. dealers.

According to Chairman Mark Singleton, the satellite system allows GM dealers to order cars and parts, put in warranty claims and send sales reports directly to the manufacturer. In turn, the system allows GM to update dealers on orders and delays.

Some services actually launch the VAR into a whole new area of business. Business Systems Solutions, Inc., a VAR in Buffalo Grove, Ill., offers a disaster recovery program called Rescue, which costs $3,000 a year. If a customer's server goes down, the program guarantees that another server will arrive in four hours, loaded with software and ready to work.

For companies with financial concerns, some VARs offer creative payment plans. Advance Software Technology, an Emoryville, Calif.-based VAR specializing in integration in the real estate, health care, legal and aviation markets, offers buyers a lease-type situation. Instead of paying a lump sum, buyers pay monthly as if renting the equipment, but they get full service and support.

"We used to approach a customer with a $150,000 solution. Now we offer the solution at $1,500 dollars per month," says Advance Software manager Jack Sandel.

For most VARs, service and support have become more than marketing slogans. Some make sure their service is up to par by sending out rate cards.

Brock also ensures problems are being handled efficiently by listening in on service calls. Surveys are then sent out to callers and mailed directly back to Brock's president. Survey feedback has resulted in the implementation of Brock's priority system, as well as the revision of product documentation.

"There are several good solutions today to do a good job, so we have to differentiate on the other end, which is customer service," says Richard Brock, chairman and founder. "The transition in the industry has to do with Americans wising up."

Bredin is a free-lance writer based in New York.

Buyer beware

VARs might be getting so good at showcasing their offerings and expertise that buyers could be fooled into believing that what appears to be a new service is actually old wine in a new bottle. Rather than offering steep discounts the way large vendors do, VARs are packaging themselves and their expertise better than ever before, says Mary Margaret Gibson, senior partner at Channel Strategies. It's not as though they want to pull the wool over customers' eyes; VARs just have to toot their own horn a little louder these days.

"We're making a bigger to-do of things we would not have highlighted in the past so customers know we are doing things for them and don't take us for granted," says Mark Singleton, chairman of Coin Dealership Systems.

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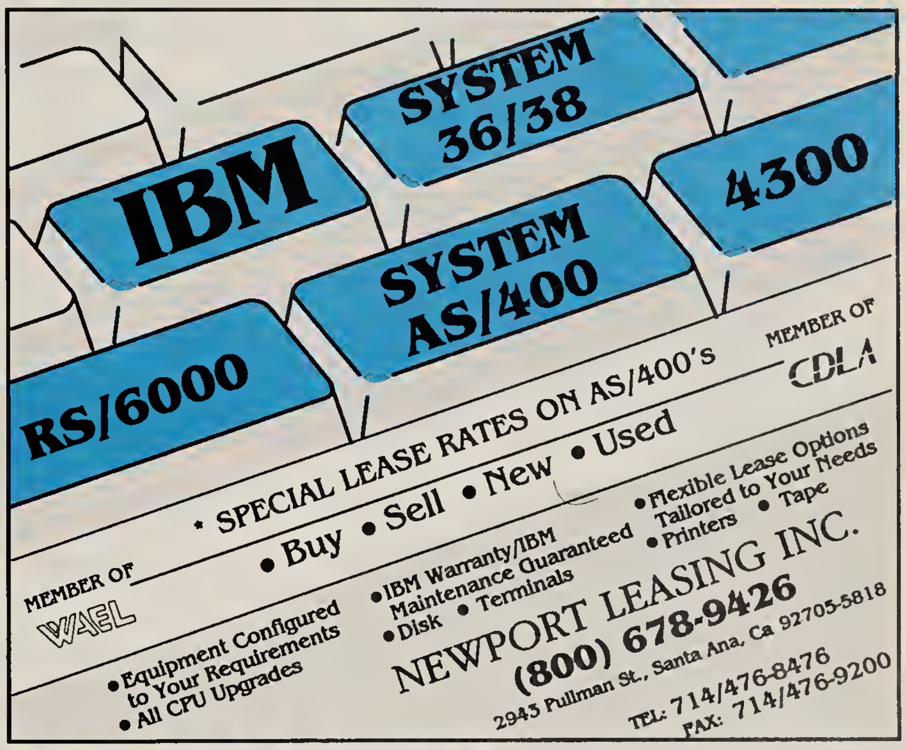

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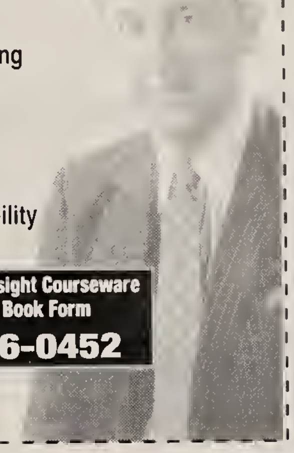

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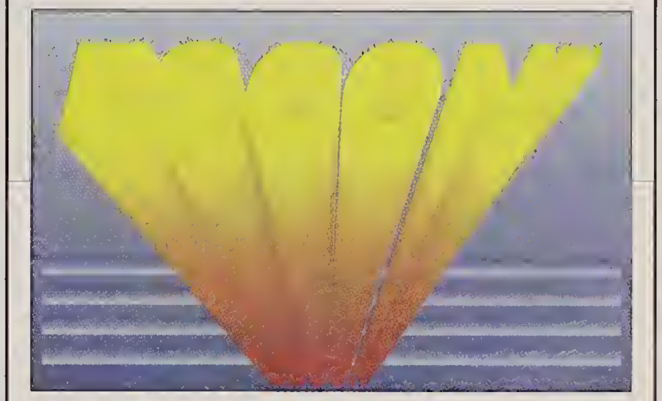

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Friday Stock Ticker

Gainers Losers

Percent

Gainers		Losers	
Sequoia Systems Inc.	67.9	Wang Labs Inc. (b)	-37.0
Easel Corp.	22.7	Intersolv Inc.	-28.8
State of the Art	21.6	IPL Systems Inc.	-21.6
Inacom Corp. (H)	21.4	Frame Technology	-19.1
Zenith Electronics	20.4	Cray Computer	-18.4
Data Switch Corp.	19.6	Convex Computer	-17.9
Symantec Corp.	16.7	Dell Computer Corp.	-16.0
Aldus Corp.	15.5	Software Toolworks Inc.	-15.5

Dollar

Gainers		Losers	
3M Corp	9.75	Dell Computer Corp.	-7.50
Sybase Inc.	4.75	Sun Microsystems Inc.	-3.88
Inacom Corp. (H)	4.50	Compaq Computer Corp.	-3.88
Auto Data Processing	4.25	Intersolv Inc.	-3.75
Policy Management Sys.	3.75	Hewlett Packard Co.	-3.50
Motorola Inc. (s)	3.25	Frame Technology	-3.25
ITT Corp.	3.13	Cheyenne Software Inc.	-3.25
Nynex Corp.	2.63	Autodesk Inc.	-3.00

Industry Almanac

Powersoft, MathSoft IPOs hot

Powersoft Corp. (PWRS) made a big splash in the market with its initial public offering (IPO) last week. The Burlington, Mass., software supplier opened trading at 20 on Wednesday. The stock value rocketed immediately, came within a whisker of doubling its share price and then settled back slightly to close at 38 ¼.

Powersoft's PowerBuilder is a leading tool set in the hot client/server application development software arena. The IPO put slightly more than $71 million into the company's coffers.

Whether the stock will drift down from its lofty perch is anyone's guess. "By most reasonable measures, you'd have to say it's an overvalued stock," said Frank Michnoff, vice president at Needham & Co. in New York. "However, there is a lot of demand for client/server companies' stocks and a low supply of them in the market."

Powersoft eased ¼ of a point on its second trading day, finishing Thursday at 38.

Powersoft's offering benefited from good timing. In addition to the client/server computing boom, the decline of certain blue-chip stocks has made more investment dollars available.

The outflow of cash from stocks such as **IBM** and **Borland International, Inc.** has helped recent IPOs as investors look for other opportunities in the technology sector.

Cambridge, Mass.-based **MathSoft, Inc.** (MATH), another software supplier, had its stock debut on Wednesday with similar success. MathSoft issues opened at 13 and finished the first day at 22.

On Thursday, MathSoft slid back ¾ of a point to close at 21¼. MathSoft's flagship product is Mathcad, a calculation software package aimed at technical professionals.

Dell stock hammered

The stock market was less kind to **Dell Computer Corp.** (DELL) last week. Dell dropped more than 7 points during the course of two days.

Two factors contributed to the falloff. First, the company announced that fourth-quarter results will fall short of general Wall Street estimates. Second, Dell officials noted that the Securities and Exchange Commission (SEC) is still investigating Dell's foreign currency trading practices. The SEC has not yet ruled whether the PC manufacturer will be required to restate its earnings.

—Derek Slater

Exch	52 Week Range			Feb.05 3PM	Wk Net Change	Wk Pct Change
			COMMUNICATIONS AND NETWORK SERVICES			**Up 1.2%**
OTC	34.63	9.63	3 COM Corp.	30.50	-0.50	-1.6
NYS	74.75	56.25	American Info Techs Corp.	72.75	1.00	1.4
NYS	55.25	36.63	AT&T	53.63	0.63	1.2
OTC	3.88	0.75	Artel Communication Corp.	2.25	-0.19	-7.7
OTC	24.50	10.25	Banyan Systems Inc.	19.00	-2.75	-12.6
NYS	53.88	40.25	Bell Atlantic Corp.	52.75	1.25	2.4
NYS	55.50	43.38	Bellsouth Corp.	52.63	0.88	1.7
NYS	6.75	3.63	Bolt, Beranek & Newman	4.75	-0.25	-5.0
OTC	17.25	10.00	Brooktrout Technology	17.25	1.13	7.0
NYS	92.25	42.13	Cabletron Systems	87.13	1.63	1.9
OTC	34.25	17.75	Chipcom Corp.	32.00	1.75	5.8
OTC	94.75	33.00	Cisco Systems Inc. (H)	88.38	0.38	0.4
OTC	27.75	5.50	Compression Labs Inc.	13.63	1.63	13.5
OTC	3.44	0.88	Data Switch Corp.	3.44	0.56	19.6
NYS	23.50	13.75	Digital Comm. Assoc.	19.38	0.38	2.0
OTC	14.75	7.50	Digital Systems Int'l Inc.	9.25	0.13	1.4
OTC	28.38	4.00	DSC Communications (H)	26.00	-1.25	-4.6
OTC	10.88	4.75	Fibronix Int'l Inc.	9.00	0.63	7.5
OTC	37.50	10.50	Filenet Corp.	13.50	-1.75	-11.5
OTC	4.38	1.50	Gandalf Technologies Inc.	3.84	0.09	2.5
OTC	2.25	0.69	Gateway Communications	1.56	0.19	13.7
NYS	10.50	2.88	General Datacomm Inds. (H)	9.38	0.25	2.7
ASE	5.88	2.00	Go Video	3.06	0.13	4.3
NYS	35.75	28.88	GTE Corp.	35.25	0.25	0.7
NYS	75.25	59.00	ITT Corp.	75.00	3.13	4.3
OTC	43.38	29.50	MCI Commmunications Corp.	40.00	0.25	0.6
OTC	14.25	2.25	Microcom Inc.	4.88	-0.88	-15.2
OTC	24.25	12.00	Netrix Corp. (H)	20.75	-1.25	-5.7
OTC	18.25	9.63	Network Computing Devices (H)	18.25	2.25	14.1
NYS	17.13	8.13	Network Equipment Tech.	10.25	-0.25	-2.4
OTC	24.88	8.00	Network General	14.88	-1.50	-9.2
OTC	16.75	8.50	Network Systems Corp.	11.38	0.38	3.4
OTC	48.25	11.88	Newbridge Networks Corp.	47.88	2.63	5.8
NYS	49.25	30.50	Northern Telecom Ltd.	42.50	-1.00	-2.3
OTC	33.50	22.50	Novell Inc.	30.25	-0.50	-1.6
NYS	88.50	69.13	Nynex Corp.	85.00	2.63	3.2
OTC	37.50	14.50	Octel Communications Corp.	27.75	1.50	5.7
OTC	9.13	3.38	Penril Data Comm Networks	5.25	0.00	0.0
OTC	53.00	10.25	Picturetel Corp.	26.63	0.63	2.4
OTC	18.25	7.00	Proteon Inc.	9.75	-0.88	-8.2
NYS	30.38	10.16	Scientific Atlanta Inc.	24.13	0.88	3.8
NYS	75.63	56.63	Southwestern Bell Corp.	69.88	0.75	1.1
NYS	28.13	20.75	Sprint Corp.	28.00	1.00	3.7
OTC	27.00	8.13	Standard Microsystems Corp	21.50	1.75	8.9
OTC	18.50	6.88	Stratacom Inc.	17.13	0.63	3.8
OTC	95.50	18.75	Synoptics Communications	86.75	0.88	1.0
OTC	7.13	4.38	Telebit Corp.	5.63	-0.25	-4.3
OTC	9.38	2.13	Telematics Int'l Inc.	9.00	0.75	9.1
OTC	25.50	13.38	US Robotics	20.50	-1.50	-6.8
NYS	40.00	32.88	U S West Inc.	39.75	1.25	3.2
OTC	46.00	12.00	Wellfleet Communications	41.50	0.75	1.8
OTC	22.00	7.00	Xircom	7.75	-0.50	-6.1
			PCS AND WORKSTATIONS			**Off 3.5%**
OTC	8.50	3.13	Advanced Logic Research	3.97	-0.22	-5.2
OTC	70.00	41.50	Apple Computer Inc.	57.63	-1.88	-3.2
OTC	24.25	11.25	AST Research Inc.	17.50	-0.63	-3.4
NYS	16.25	5.50	Commodore Int'l	5.50	-1.00	-15.4
NYS	58.50	22.25	Compaq Computer Corp.	48.00	-3.88	-7.5
OTC	49.88	15.00	Dell Computer Corp.	39.25	-7.50	-16.0
NYS	38.63	26.63	Harris Corp.	35.25	0.00	0.0
NYS	85.00	50.25	Hewlett Packard Co.	68.25	-3.50	-4.9
NYS	33.00	14.13	Silicon Graphics	30.50	-0.50	-1.6
OTC	41.00	22.50	Sun Microsystems Inc.	35.13	-3.88	-9.9
NYS	32.13	22.25	Tandy Corp.	28.00	1.50	5.7
NYS	11.13	5.00	Zenith Electronics	7.38	1.25	20.4
OTC	22.75	2.75	Zeos International Ltd.	5.88	-0.25	-4.1
			LARGE SYSTEMS			**Off 0.6%**
ASE	20.63	6.63	Amdahl Corp.	8.00	-0.50	-5.9
NYS	16.00	4.75	Convex Computer	5.75	-1.25	-17.9
OTC	9.50	1.88	Cray Computer	3.88	-0.88	-18.4
NYS	46.50	19.00	Cray Research Inc.	25.00	-2.63	-9.5
NYS	13.00	7.13	Data General Corp.	11.88	0.38	3.3
NYS	65.50	30.38	Digital Equipment Corp.	42.50	0.38	0.9
NYS	100.38	45.88	IBM	52.00	0.63	1.2
OTC	19.50	5.50	Kendall Square Research	18.00	0.00	0.0
NYS	113.00	83.00	Matsushita Electronics	89.50	-1.88	-2.1
OTC	17.00	6.00	Pyramid Technology	14.50	0.00	0.0
OTC	24.00	11.13	Sequent Computer Sys.	21.38	1.00	4.9
OTC	16.38	1.38	Sequoia Systems Inc.	2.94	1.19	67.9
NYS	54.25	29.50	Stratus Computer Inc.	34.38	2.13	6.6
NYS	16.88	9.88	Tandem Computers Inc.	13.63	-0.13	-0.9
NYS	13.25	7.75	Unisys Corp.	12.13	-0.25	-2.0
ASE	7.50	0.06	Wang Labs Inc. (b)	1.06	-0.63	-37.0
			SOFTWARE			**Off 0.9%**
OTC	63.50	25.25	Adobe Systems Inc.	41.50	0.25	0.6
OTC	34.25	10.25	Aldus Corp.	16.75	2.25	15.5
OTC	19.75	7.00	American Software Inc.	8.13	-0.50	-5.8
OTC	25.63	9.75	Ask Computer Systems (H)	24.00	0.75	3.2
OTC	56.50	23.25	Autodesk Inc.	43.75	-3.00	-6.4
OTC	37.75	3.50	Bachman Info. Systems	4.13	0.25	6.5
OTC	43.00	34.00	BGS Systems Inc.	40.25	0.00	0.0
OTC	84.13	37.25	BMC Software Inc.	73.50	-2.75	-3.6
OTC	28.25	16.75	Boole & Babbage (H)	26.25	-0.75	-2.8
OTC	78.00	17.50	Borland Int'l Inc.	20.25	-1.13	-5.3
OTC	10.25	3.00	CE Software	3.88	0.13	3.3
ASE	35.00	9.38	Cheyenne Software Inc.	28.13	-3.25	-10.4
OTC	19.50	8.25	ChipSoft (H)	17.88	-1.13	-5.9
OTC	11.88	5.63	Cognos Inc.	7.38	-0.25	-3.3
NYS	27.38	10.88	Computer Associates	24.25	-1.38	-5.4
NYS	12.38	4.00	Computervision Corp.	5.25	-0.88	-14.3
OTC	18.50	6.75	Comshare Inc.	9.25	-0.75	-7.5
OTC	17.25	10.75	Corel Corp. (L)	11.88	0.25	2.2
OTC	46.25	6.00	Easel Corp.	13.50	2.50	22.7
OTC	26.50	11.75	Frame Technology	13.75	-3.25	-19.1
OTC	25.00	12.50	Group 1 Software	14.00	1.00	7.7
OTC	8.50	3.50	Hogan Systems Inc.	8.50	0.63	7.9
OTC	25.75	13.75	IMRS	15.25	1.25	8.9
OTC	36.25	18.50	Information Resources	29.25	-0.75	-2.5
OTC	42.00	12.13	Informix Corp.	38.38	1.75	4.8
OTC	21.25	11.00	Intergraph Corp.	11.88	0.13	1.1
OTC	15.00	7.75	Interleaf Inc.	11.00	-0.25	-2.2
OTC	19.00	9.25	Intersolv Inc.	9.25	-3.75	-28.8
OTC	21.38	9.50	Knowledgeware Inc.	11.50	-1.25	-9.8
OTC	54.00	28.75	Legent Corp.	52.25	1.00	2.0
OTC	38.75	14.75	Lotus Development	24.50	1.50	6.5
OTC	23.25	13.00	McAfee Associates	14.00	-1.13	-7.4
OTC	8.38	1.88	Meca Software	6.63	-0.88	-11.7
OTC	22.25	5.25	Mentor Graphics	10.13	0.13	1.3
OTC	46.00	27.25	Micro Focus	42.63	-1.00	-2.3
OTC	20.50	6.50	Micrografx Inc.	10.50	-0.50	-4.5
OTC	95.00	65.50	Microsoft Corp.	88.38	1.63	1.9
OTC	36.38	12.00	Oracle Corp.	31.38	-0.13	-0.4
OTC	63.25	25.25	Parametric Technology	58.13	-1.25	-2.1
OTC	40.25	22.50	Peoplesoft (H)	36.13	-0.63	-1.7
OTC	11.00	3.50	Phoenix Technologies	5.50	0.25	4.8
OTC	25.00	11.25	Platinum Technology	19.50	-2.25	-10.3
OTC	61.50	29.00	Progress Software Corp.	55.25	-0.50	-0.9
OTC	24.50	3.13	Quarterdeck Office Sys.	3.63	-0.31	-7.9
OTC	32.75	11.75	Rainbow Technologies Inc.	17.00	-1.50	-8.1
OTC	22.75	4.00	Rasterops	8.25	0.25	3.1
OTC	17.25	3.63	Ross Systems	9.75	0.25	2.6
OTC	27.25	8.50	Sapiens USA Inc.	23.25	-0.25	-1.1
OTC	26.25	6.75	Software Publishing Corp.	12.38	0.38	3.1
OTC	8.88	2.00	Software Toolworks Inc.	7.50	-1.38	-15.5
OTC	6.13	0.75	Spinnaker Software	1.47	-0.03	-2.1
OTC	16.50	3.25	State of the Art	11.25	2.00	21.6
NYS	24.75	13.75	Sterling Software Inc.	23.00	0.38	1.7
OTC	25.25	8.00	Struct. Dynamics Research	13.88	0.75	5.7
OTC	60.00	21.00	Sybase Inc.	60.00	4.75	8.6
OTC	48.75	5.88	Symantec Corp.	12.25	1.75	16.7
NYS	13.50	5.25	Systems Center Inc.	8.25	0.63	8.2
OTC	25.50	11.84	System Software Assoc.	15.88	-2.63	-14.2
OTC	13.25	2.50	Trinzic Corp.	4.13	-0.25	-5.7
OTC	23.75	11.00	Walker Interactive Systems (L)	11.75	0.50	4.4
OTC	4.38	1.38	Wordstar	2.63	0.00	0.0
			SEMICONDUCTORS			**Off 1.4%**
NYS	21.50	7.38	Advanced Micro Devices	19.63	1.00	5.4
NYS	17.50	8.63	Analog Devices Inc.	17.50	0.88	5.3
OTC	20.13	7.63	Atmel Corp.	16.75	-1.25	-6.9
OTC	14.13	3.25	Chips and Technologies	4.00	-0.25	-5.9
NYS	16.88	7.38	Cypress Semiconductor Corp	11.00	0.13	1.1
NYS	16.13	7.00	Dallas Semiconductor	14.88	0.50	3.5
OTC	118.00	46.50	Intel Corp.	106.75	-1.50	-1.4
NYS	12.25	4.88	LSI Logic Corp.	10.50	-0.38	-3.4
NYS	24.38	12.88	Micron Technology (H)	23.50	1.25	5.6
NYS	63.00	36.44	Motorola Inc. (s)	53.25	3.25	6.5
NYS	14.13	8.25	National Semiconductor	10.50	-1.25	-10.6
OTC	25.50	8.25	Sierra Semiconductor	12.50	-0.88	-6.5
OTC	38.50	22.25	SynOpsys	30.88	-2.88	-8.5
NYS	59.25	31.50	Texas Instruments	53.75	0.25	0.5
OTC	10.50	6.00	VLSI Technology	7.38	-0.38	-4.8
OTC	7.63	2.13	Weitek	5.88	-0.38	-6.0
ASE	9.63	3.50	Western Digital Corp.	8.88	0.00	0.0
OTC	33.25	14.50	Xilinx	29.75	0.25	0.8
OTC	41.75	18.75	Zilog Inc. (H)	37.00	-0.13	-0.3
			PERIPHERALS AND SUBSYSTEMS			**Off 1.4%**
OTC	28.75	10.38	American Power Conversion	24.25	-1.25	-4.9
OTC	30.25	19.00	Banctec Inc.	28.00	0.75	2.8
OTC	23.50	9.25	Cambex Corp.	13.00	-1.00	-7.1
ASE	18.38	6.00	Cognitronics Corp. (H)	17.38	-0.50	-2.8
NYS	25.50	16.75	Conner Peripherals	21.75	-2.00	-8.4
OTC	36.75	10.75	Creative Technologies Inc.	31.50	-0.75	-2.3
OTC	30.75	14.25	Data Race Inc.	25.25	-2.25	-8.2
ASE	19.66	4.75	Dataram Corp.	10.50	0.00	0.0
NYS	28.38	7.25	EMC Corp. (H)	25.38	-0.38	-1.5
OTC	10.50	5.38	Emulex Corp.	7.25	0.75	11.5
OTC	20.75	13.25	Evans & Sutherland	18.00	-0.25	-1.4
OTC	40.63	12.00	Exabyte	14.13	-0.50	-3.4
OTC	78.00	20.38	Intelligent Info. Systems	71.50	1.50	2.1
OTC	11.25	4.75	Iomega Corp.	6.25	0.00	0.0
OTC	34.75	7.25	IPL Systems Inc.	7.25	-2.00	-21.6
OTC	23.25	10.75	Komag Inc.	20.75	0.88	4.4
OTC	19.63	8.38	Maxtor Corp.	9.75	-0.88	-8.2
OTC	12.63	7.13	Micropolis Corp.	8.75	-0.13	-1.4
NYS	108.00	85.50	3M Corp	108.00	9.75	9.9
OTC	7.75	4.00	Printronix Inc.	6.75	-0.50	-6.9
NYS	17.13	6.88	QMS Inc. (H)	15.00	0.38	2.6
OTC	18.00	12.13	Quantum Corp.	17.38	1.38	8.6
OTC	12.75	3.75	Radius Inc.	5.38	0.00	0.0
NYS	16.25	7.50	Recognition Equipment	14.50	-0.38	-2.5
OTC	13.88	6.50	Rexon Inc.	6.63	-0.38	-5.4
OTC	22.38	12.00	Seagate Technology	18.50	0.00	0.0
NYS	77.00	18.38	Storage Technology	19.38	-0.75	-3.7
NYS	24.50	16.50	Tektronix Inc. (H)	24.50	1.25	5.4
NYS	87.50	66.75	Xerox Corp.	86.00	2.00	2.4
			SERVICES			**Up 1.4%**
OTC	23.50	12.16	American Mgmt. Systems	21.63	-0.63	-2.8
NYS	5.38	3.00	Anacomp Inc.	3.88	-0.25	-6.1
OTC	35.75	16.00	Analysts Int'l	31.75	-0.25	-0.8
NYS	55.63	38.75	Auto Data Processing	55.25	4.25	8.3
NYS	17.25	8.97	Ceridian Corp.	14.75	-0.50	-3.3
NYS	19.41	12.50	Comdisco Inc.	16.00	1.88	13.3
OTC	13.25	6.75	Computer Horizons	10.75	0.25	2.4
NYS	84.88	57.00	Computer Sciences	79.00	-0.63	-0.8
NYS	10.13	7.13	Computer Task Group	7.88	-0.13	-1.6
NYS	40.50	22.00	CompUSA Inc.	29.63	-1.13	-3.7
OTC	19.25	6.00	Corporate Software	12.38	0.25	2.1
OTC	30.75	7.75	Egghead Discount Software	9.13	-0.88	-8.8
NYS	35.88	25.25	General Motors E (EDS)	34.75	0.88	2.6
OTC	25.50	9.25	Inacom Corp. (H)	25.50	4.50	21.4
OTC	30.38	6.25	Intelligent Electronics	14.75	0.25	1.7
OTC	14.88	6.63	Merisel	12.63	0.38	3.1
OTC	15.75	5.75	Microage Inc.	12.00	-0.50	-4.0
OTC	40.00	21.66	Paychex	35.75	0.00	0.0
NYS	83.50	59.75	Policy Management Sys.	83.00	3.75	4.7
NYS	31.38	16.81	Reynolds and Reynolds (H)	29.88	0.38	1.3
OTC	32.00	22.00	SEI Corp.	29.00	0.25	0.9
OTC	24.00	16.88	Shared Medical Systems	23.63	0.25	1.1
OTC	14.38	5.75	SHL Systemhouse	7.25	0.13	1.8
OTC	29.25	18.25	Software Spectrum Inc.	23.25	-2.00	-7.9
OTC	32.25	20.75	Sungard Data Systems	31.00	-0.88	-2.7
NYS	3.63	1.13	Ultimate Corp.	2.13	0.25	13.3

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

IPOs profit pluses . . .

The **IDEA** group of companies in Billerica, Mass., reported record 1992 profits of $40.9 million. However, sales slipped 6% to $170.3 million . . . . 1992 profits at **Banyan Systems, Inc.** in Westboro, Mass., increased by 183% to $8.2 million on a 13% revenue increase from 1991 to $113.5 million . . . . **Sterling Software, Inc.**'s expansion into electronic data interchange continues to pay off. First-quarter revenue rose 17% to $65.6 million, and profits rose 41% to $3.8 million. . . . Revenue at **Walker Interactive Systems, Inc.** in San Francisco soared 41% to $62.8 million for 1992, with net income jumping to $10.7 million, a 205% increase from 1991. . . . **Sybase, Inc.** in Emeryville, Calif., closed out a record year with 1992 revenue up 65% to $264.6 million and profits up 206% to $23.7 million. Operating margins during the fourth quarter reached a record 21%.

. . . and minuses

Aldus Corp. closed the books on 1992 revenue of $174.1 million, but that was only a 4% increase over the previous year. Income fell 71% to $6.8 million. . . . Troubles continue at **Intellicorp, Inc.** in Mountain View, Calif. The developer of object-oriented tools lost $1.6 million in the second quarter on a slight decline in revenue to $2.89 million. . . . A change of distribution strategies and the PC price wars hit earnings at **Advanced Logic Research, Inc.** in Irvine, Calif. The PC maker lost $915,000 in its first fiscal quarter on a 14% decline in sales to $42.5 million . . . . The slowdown in the mainframe market dampened quarterly earnings at **Comshare, Inc.**, a software firm in Ann Arbor, Mich. Sales fell 19% to $26.9 million, and profits were off 60% at $333,000.

Revamped DG on revenue rebound

Open systems, leaner staffing boost firm's profits for second straight quarter

By Melinda-Carol Ballou

A restructured Data General Corp. seems to be rebounding somewhat, having posted its second consecutive profitable quarter last month. Analysts attributed the slight rise in DG's fortunes to dramatic staff cuts completed last year and more recent gains achieved in the open systems arena.

Analysts expect DG to continue to generate revenue by pursuing sales in open systems areas via its Aviion line of workstations and Clariion redundant arrays of inexpensive disks (RAID) technology.

"Their future growth will rest on Aviion and Clariion as their proprietary systems decline," said Fara Yale, senior industry anlayst at Dataquest, Inc., a market researcher in San Jose, Calif.

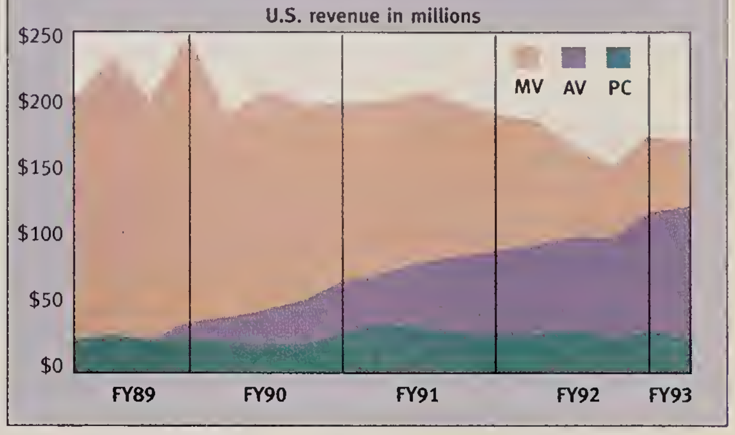
While DG's financials have been "perched on the knife's edge of break-even," the company is likely to make a dent in the market with Clariion because it is the first large company to move forward with RAID for Unix, said John Adams, chairman of Adams, Harkness & Hill, Inc., a Boston consulting firm.

"Users like the price of open systems, but they've found as they downsize that some of the things that mainframes had were pretty important — like data integrity," Adams said. "RAID is the likely answer."

DG's Clariion storage systems are available on DG systems as well as Unix-based platforms from IBM and Sun Microsystems, Inc. Ports to Unix systems from Hewlett-Packard Co., Unisys Corp. and ICL are slated for availability later this year, officials said. The next generation of Clariion products will be announced next month at Uniforum 1993, they added.

Taking over

Data General's Aviion line has cannibalized the revenue of its once bread-and-butter MV machines



Source: Data General Corp.

DG's income for fiscal 1992 ranged from a gain of $5 million in Q1 to a loss of $10 million in Q3.

DG meanwhile is bolstering its success in the open systems sphere by expanding Clariion's distribution and through software partnerships centered around Aviion.

Moving forward for DG also hinges on the successful outcome of a lawsuit against Grumman Systems Support Corp., which was ordered to pay DG $36.4 million in damages and $15.9 million in additional interest for software copyright infringements and trade secrets. Grumman is expected to appeal.

Any damages collected will supplement DG's operating income for fiscal 1992, which ranged from a gain of $5 million in the first quarter to a loss in the third quarter of $10 million related to restructuring costs. For the fourth quarter of 1992 and the first quarter of 1993, the company announced profits of $3 million and $4 million, respectively. Total fiscal 1992 revenue was $1.1 billion, with an operating loss of $8 million and a net loss of $63 million.

Helping those profits is the reduction of head count — from a high of 18,000 in 1985 to the current number of 6,900.

"We were able to achieve profitability in the first quarter despite continuing weakness in the worldwide economy and very competitive industrywide pricing pressures," said President and Chief Executive Officer Ron Skates. He added that while other companies, such as IBM and Digital Equipment Corp., are in the midst of downsizing and restructuring, DG has completed its reorganization and is moving forward.

Everex sells business units in effort to get back in black

By Michael Fitzgerald

FREMONT, CALIF.

Loss-ridden Everex Systems, Inc., which is trying to climb out of Chapter 11 bankruptcy, has started its journey back to profitability by shedding some weight. But analysts said the company still has a long way to go.

Exabyte Corp., the Boulder, Colo., concern that makes high-level tape backup products, said it has offered $5.5 million for Everex's Mass Storage Division, which has done well in the low end of the market.

(Exabyte also announced the purchase of Tallgrass Technologies Corp., another tape backup supplier.)

Separately, the unit responsible for Esix, Everex's version of Unix, went to the James River Group for $210,000.

Analysts were neutral about the deals.

"Strategically, it makes sense for them to get rid of that stuff, but it won't help their bottom line much," said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass.

Henning pointed out that although it is small, Everex's tape backup division is considered by the industry to be relatively successful.

"It's like they're selling a good part of the company," Henning said.

The two deals must be approved by Everex's creditors committee, its secured lender (C.I.T. Group) and the bankruptcy court. Everex is also expected to attempt to sell more significant units.

As if to show it is still alive, Everex also announced that under a contract with the U.S. Department of Defense — one of several government contracts Everex holds — it is expediting 11 file servers to Kuwait.

Balancing the load

Everex, which lost $48M last year and could lose $120M this year, has received letters of intent for the sale of two business units while also striking a sales deal with the Department of Defense

WEIGHT SHED

Division sold	Buyer	Technology	Sale price
Mass Storage Division	Exabyte Corp.	SCSI tape drives; DC 2000-base 1/4-in. cartridges	$5.5M
Esix Software Division	James River Group	Develops and markets System V Unix	$210,000

WEIGHT GAINED

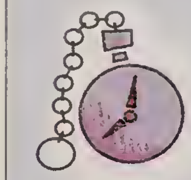
Product sold	Buyer	Quantity sold
486 extended industry standard architecture file server	Department of Defense	11

Trends Handling system outages

Are data centers prepared to face complete outages of their mainframe service? IS professionals at 869 mainframe sites fielded questions about system outages and recovery plans. Here are some of their thoughts:

The majority believe they could provide an adequate replacement service **within two to four days.**

Approximately 68% have a disaster recovery plan in place. Most were put together in mid-1987 and last updated in early 1992.



The recovery time for a 2-year-old recovery plan is **more than twice that** for a recent one.

On average, during a four-year span, recovery plans are tested **five times.**

37 hours is the average recovery time for plans tested one or more times a year.

72 hours is required for those tested every one to two years.

56% have a stand-by site in case of disaster.

Average stand-by site contracts for different industries:

$334,000 for government.

$150,000 for finance and banking.

$117,000 for insurance.

Base: 553 U.S. mainframe sites, 316 international sites

Source: Xephon/WPWS, Oviedo, Fla.

The Fifth Wave

EMPLOYEES OF PDQ, INC. WERE ASKED FOR THEIR INPUT IN EVALUATING THEIR CURRENT INFORMATION PROCESSING SYSTEM.
WELL, MAYBE IF THE CLOTHESPINS WERE RIBBED, THE PAPER WOULDN'T FALL OFF THE LINE AS MUCH.

Inside Lines

Dear Mort:

In the wake of a system crash that caused NationsBank to lose track of account balances in two states for four days last December, sources said the company recently sent its outsourcer, Perot Systems, a "shape up or ship out" letter. The country's fourth largest bank can boast Ross Perot as a major depositer but is believed to have grown impatient with his namesake company after a series of incidents. For instance, Perot Chairman Mort Meyerson at one point yanked star performers off the account to tend to other trouble spots. He reportedly returned them and may be saving the relationship.

Dear John:

One of IBM Chairman and CEO John Akers' last pieces of correspondence as head of IBM came from Ken Pontikes, who founded Comdisco. The two companies are currently embroiled in a bitter legal dispute over Comdisco's alleged theft of parts from IBM mainframes. After potential damages in the case were set at a minuscule $2 million, Pontikes sent a "Dear John" letter suggesting the two CEOs get together and settle the case themselves because each company has spent far more on legal fees than the proposed damages. No word on Akers' response.

The kettle's a-boil

Yes, Virginia, there is something cooking between HP and Next, Inc. A top HP official confirmed last week that the rumored talks are indeed happening, and the subject is a possible port of the NextStep environment to HP's PA-RISC line. "But we have reached no agreement in that area," stressed Willem Roelandts, vice president and general manager of HP's computer systems organization. He said the snag so far is that Steve Jobs, president and founder of Next, is balking at HP's insistence that NextStep comply with certain open systems standards, namely the OSF's Distributed Computing Environment and the Object Management Group's Common Object Request Broker Architecture. "Steve is dancing around the table," Roelandts said. "But he needs us more than we need him."

Even more people are talking

High-level discussions between DEC and Microsoft are continuing, according to internal sources, who said DEC's vice president of engineering, Bill Strecker, is negotiating with Bill Gates to ultimately support Cairo, Microsoft's object-oriented, follow-up operating system to Windows NT.

Boom boxes

Separately, and closer on the horizon, is a family of OSF/1-based Alpha AXP workstations that DEC is expected to unveil at Uniforum next month, sources said. These include a 200-MHz workstation priced to compete with IBM and HP machines.

NetWare soaks up some Sun

Novell and Sun Microsystems Computer Corp. will be announcing an "expanded business relationship" next week at a press conference in Santa Clara, Calif. Industry watchers speculate that development of native NetWare for Sun's SPARC chip, or perhaps the release of NetWare for Sun's Solaris operating system, could be in the works.

At least one seriously bummed-out PC user has found that hell hath no fury like a divorced man. According to an Associated Press report, a Santa Rosa, Calif., man has admitted to sabotaging his ex-wife's computer with a disk that erased all her files. All that was left was a "taunting limerick." But she may yet have the last laugh: He's been ordered to stand trial on a felony computer-tampering charge. If convicted, her disk-corrupting ex-husband could face a maximum of three years in prison. If you want to drop a dime on a computer crime, phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555.*

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The power of INGRES architecture carries through the entire INGRES family of products. INGRES/Star integrates multiple databases, independent of location. And INGRES/Gateways offers SQL access, letting you extend INGRES capabilities to other database environments.

Tim Treneff, VAX Systems Manager, Kaiser Aluminum & Chemical Corporation, Rod, Bar & Wire Division.

"In our division, we've built one of the most advanced and integrated manufacturing systems I can think of. Everything runs through our databases: manufacturing, administration, and finance. Twenty-four hours a day. Seven days a week. Three separate manufacturing facilities in three different locations running as one.

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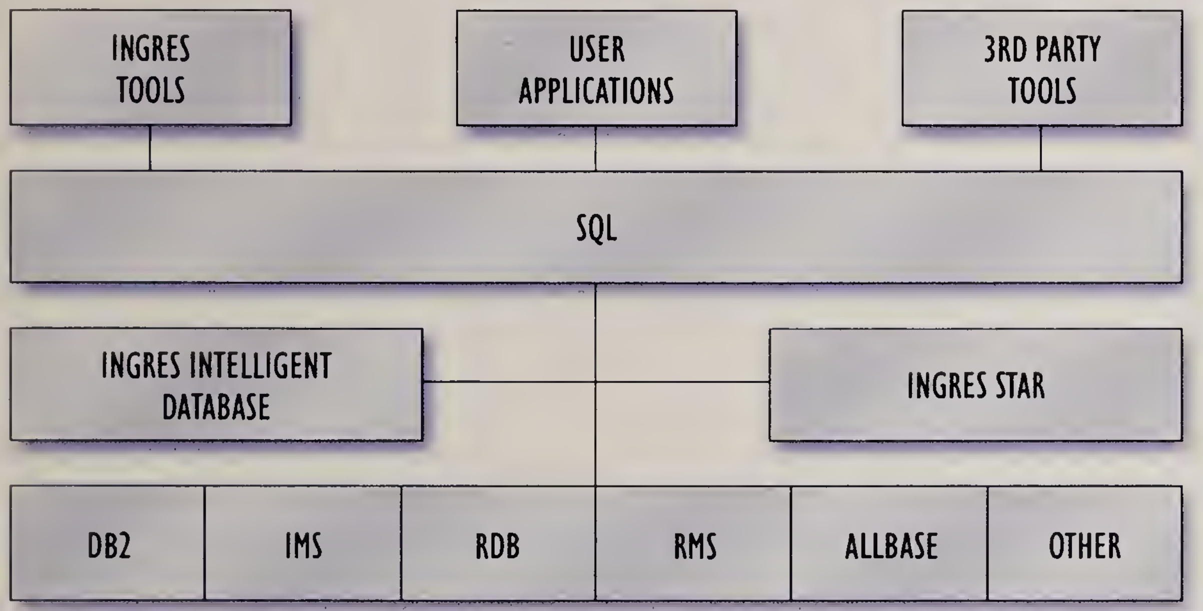

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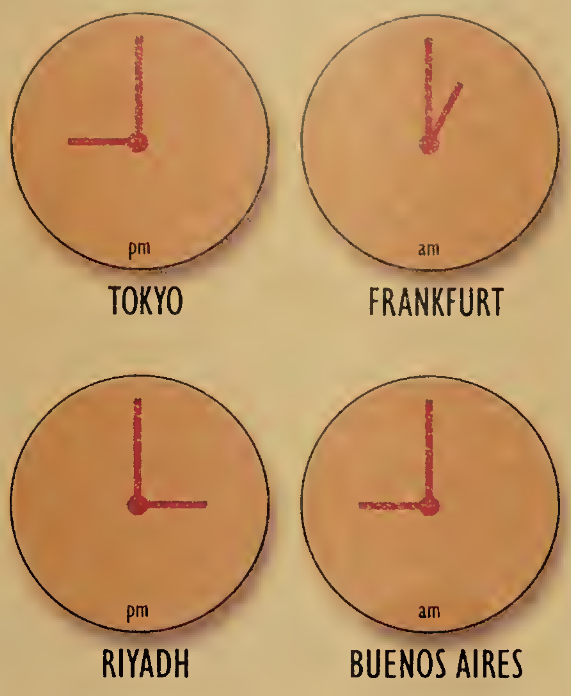

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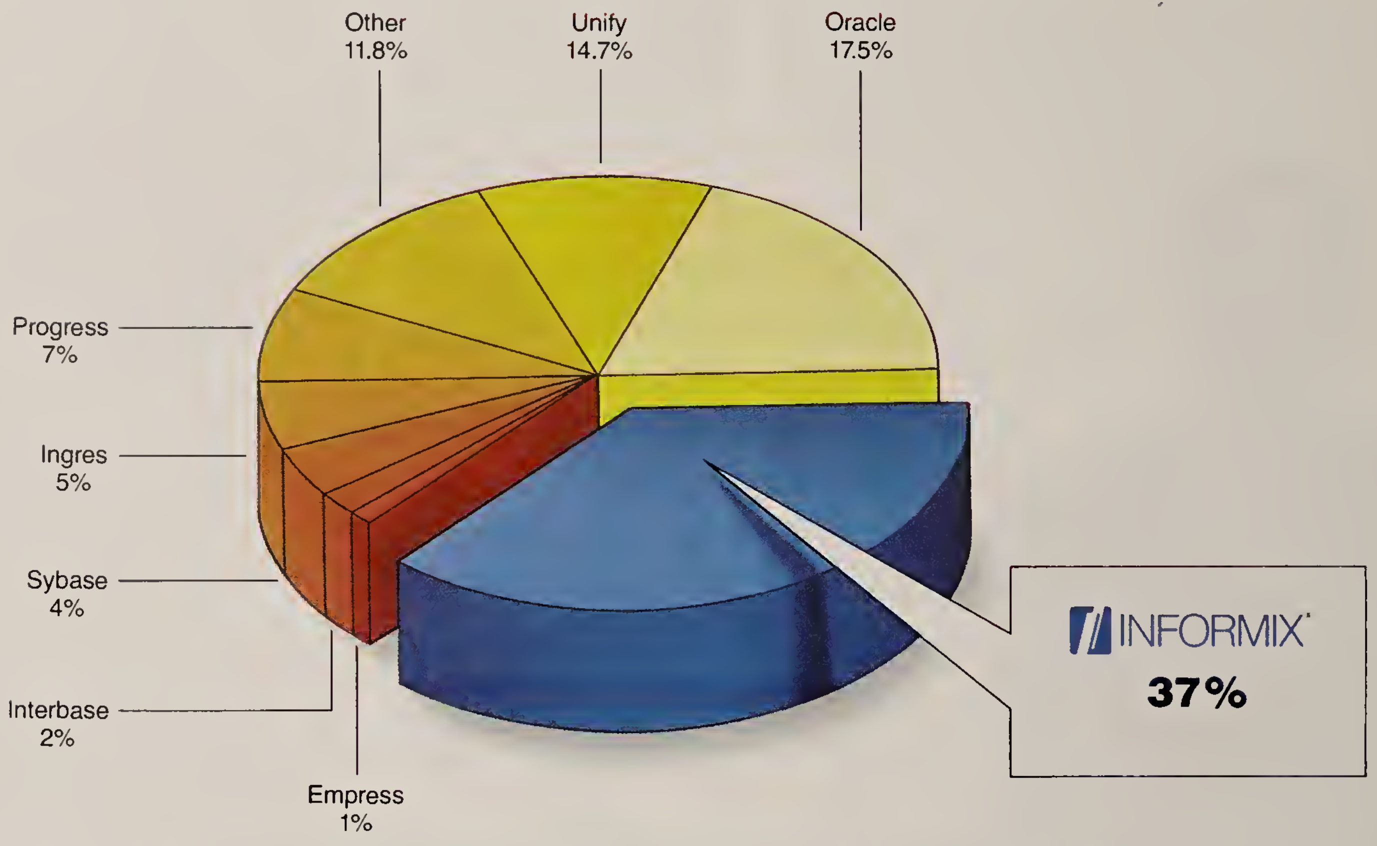
The UNIX Database Leader Now Does NetWare.



Worldwide UNIX Relational Database Software License Shipments, 1991
Source: International Data Corporation, 1992

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